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Brief Handbook of Accelerator Facilities, Some Special Terms and Institutions Addresses

(The 2nd remake and enlarged edition)

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BRIEF HANDBOOK OF ACCELERATOR FACILITIES, SOME SPECIAL TERMS AND INSTITUTIONS ADDRESSES (The 2nd remake and enlarged edition): Preprint ITEP 18-02/

N.V.Lazarev - M., 2002 – 88p.

In supposed brief handbook next three alphabetical lists are given:

- accelerator facilities with decoding of their abbreviated name, with indication their parameters and location (accelerator's center, town, country), year of launching and references containing more detail data (p.3-56);
- some of abbreviations used in literature on accelerators and their control systems (p.57-69);
- basic accelerator's centers, institutes and firms with post and E-mail addresses of their employee (mainly APAC-98, PAC-99 and PAC-01 authors) on their names or mottoos (p.70-88).

КРАТКИЙ СПРАВОЧНИК ПО УСКОРИТЕЛЬНЫМ УСТАНОВКАМ, НЕКОТОРЫМ СПЕЦИАЛЬНЫМ ТЕРМИНАМ И АДРЕСАМ УСКОРИТЕЛЬНЫХ ЦЕНТРОВ
(2-ое переработанное и дополненное издание)

Н.В. Лазарев

В предлагаемом кратком справочнике даны на английском языке три алфавитных перечня:

- ускорительных установок с расшифровкой их сокращенных названий, указанием их параметров и местонахождения (ускорительный центр или город), годом их запуска, а также публикаций с более подробными данными (с.с. 3-56);
- некоторых аббревиатур, используемых в литературе по ускорителям и системам управления ими (с.с.57-69);
- основных ускорительных центров, институтов и фирм с почтовыми адресами и электронными адресами сотрудников этих организаций (авторов докладов на конференциях по ускорителям) по их фамилиям или девизам (с.с. 70-88).

Предисловие

Читая статьи журнала CERN Courier по тематике чуть в стороне от своей узкой специализации или просматривая доклады в трудах международных конференций по ускорителям приходится часто "спотыкаться" на специфических аббревиатурах, не имеющих универсального характера. Кроме того, изобилие самых различных ускорительных установок, несмотря на звучные их названия, не всегда позволяет вспомнить расшифровку этих названий, параметры установок и другие подробности.

Приведенный ниже алфавитный перечень "FACILITIES" - ускорительных установок по их названиям (или типам и назначениям) составлен на основе CERN Courier, Трудов конференций по ускорителям PAC, EPAC, LINAC, APAC, RUPAC (СУЗЧ) нескольких последних лет и справочных изданий, выпускавшихся малыми тиражами только для участников конференций. Перечень содержит расшифровку названия каждой ускорительной установки, ее основные параметры, год запуска, страну, город или научный центр, а также публикации, позволяющие получить большую информацию. Краткость приводимых сведений позволила охватить подавляющее большинство крупных установок.

Во второй части "TERMS" приведена краткая расшифровка некоторых аббревиатур, используемых в литературе по ускорителям и по системам управления ими, где неискушенному читателю разобраться бывает особенно трудно.

Третья часть "INSTITUTIONS" содержит данные для быстрого нахождения E-mail и почтового адреса коллег из наиболее известных ускорительных центров, лабораторий и организаций, расположенных в алфавитном порядке; также расположены и фамилии или девизы этих коллег по месту их работы.

Представляется, что эти перечни могут оказаться полезными (особенно при введении в PC) не только автору-составителю. Очевидно, перечень терминов, выбор установок и список научных центров далеко не полны, они показывают только круг интересов автора, а каждый специалист может сделать наиболее полезные для него дополнения и сокращения. Более того, данные из проводимых каждый год конференций будут являться естественными дополнениями, легко вводимыми с помощью PC.

Большую пользу в практической деятельности мог бы принести разработчикам справочный материал в виде списка оригинальных публикаций по ключевым словам, однако, выбор последних настолько индивидуален, что должен делаться каждым для себя лично, иначе объем издания может увеличиться до размеров энциклопедии.

Автор надеется, что отсутствие перевода на русский язык не создаст лишних затруднений читателям, а замеченные неточности, ошибки, отзывы и возможные предложения просьба сообщить Н.В.Лазареву, используя E-mail: Nikolay.V.Lazarev@itep.ru или по адресу: 117218, Москва, Б.Черемушкинская ул. 25, ИТЭФ.

Второе издание этого справочника заметно переработано и дополнено данными из Трудов: XVII СУЗЧ - Совещания по ускорителям заряженных частиц (e.g. 17th RUPAC), APAC-98, EPAC-00, LINAC-00, PAC-01, APAC-01, по аннотациям докладов EPAC-02 и LINAC-02, а также из журнала CERN Courier до Vol.42, №6, 2002 и по другим публикациям.

The foreword

Reading clauses CERN Courier on subjects slightly away from the narrow specialisation or looking through the reports in works of international conferences on accelerators it is frequently one's "stumbles" over specific abbreviations which are not having of universal character. Besides the abundance of the greatly various accelerating installations, despite of their sonorous names, not always allows to remember decoding these names, parameters of installations and other details.

The given below alphabetic list "FACILITIES" - accelerating installations under their names (or types and assignments) is made on the basis of a reference media which is let out in limited spreading only for the participants of conferences. The list contains decoding the name of each accelerating installation, its basic parameters, year of start, country, city or scientific centre, and also publications allowing to receive the more detail information. Brevity of adducing data allows to cover overwhelming majority of large-scale and noticeable machines in the world.

In the second part "TERMS" the brief decoding of abbreviations used in the literature on accelerators and on their control systems is given where the unsophisticated reader meets the most difficulties for understanding.

The third part "INSTITUTIONS" contains given for a prompt finding E-mail and post addresses of the colleagues from the most known accelerating centres, laboratories and organisations located in alphabetic order, surnames or mottoos of these colleagues in a place of their operation also are located in the same order.

It seems, that these lists can appear useful (especially if they to put in PC) not only for author. Unconditionally list of the terms, choice of installations and list of scientific centres are not complete, they show only circle of interests of the author, and each specialist can make most useful for him of addition and cutting. Moreover, the data from conferences, spent everyone year, will be natural additions easily inlet with the help PC.

The noticeable advantages in practical activity could be brought to the developers due to use such material as the list of the original publications on key words, however their choice is so individual, that should be done only by everyone for itself personally, differently volume of the edition can increase up to the sizes of the encyclopaedia.

The author hopes, that the absence of translation on Russian will not create superfluous difficulties to the readers, and noted inexactness, errors, responses and possible propositions the request to inform N.V. Lazarev on the address: 117218, Moscow,B. Cheremuschkinskaia ul. 25, ITEP or E-mail: Nikolay.V.Lazarev@itep.ru

The 2nd remake edition of the Brief Handbook supplemented with data from next new Proceedings: of 17th (2000) Russian RUPAC, APAC-98, EPAC-00, LINAC-00, APAC-01, PAC-01, available now books of Abstracts from EPAC-02 and LINAC-02 and CERN COURIER up to Vol.42, No.6, 2002, etc

Facilities, their short and full names, affiliation (Institute and country), parameters and last or important references.

Abbreviations: *Latin* and English accepted here and/or elsewhere	avg. – average; *ca* – *circa* – approximately, примерно; *cf* (*cf.*) – *confer* – сравни; c.m. (c. of m.) – center of mass; CW – continues wave; *e.g.* *(eg)* – *exemply gratia* - например; *et al* – *et alii* – и другие люди, (- *et alia* – и другие вещи); *etc* – *et cetera* – и так далее; *ibid.* – *ibidem* – там же; *i.e.* *(ie)* – *id est* – то есть; NA – not available; NC – normal conditions; NB – *nota bene* – особое примечание; p.a. *(pa)* – *per annum* - за год, ежегодно; pps – pulse per second; R&D – research and development; RT – room temperature; s. – since; *viz* – *videlicet* – namely, именно. References of English & Russian Conferences and Sci. Magazines: AC-98 = Accelerators Catalogue of HEACC'98 Conf. (Dubna, 1998); ADTT(A) = Accelerator Driven Transmutation Technology (and Application) Conf.: from the 1st (Los Angeles, 1994) to 3rd (Prague, 1999); APAC = Asian Particle Accelerator Conf., (Tsukuba, 1998 and Beijing, 2001); HEACC'98 Conf. (Dubna, 1998); C-89 = Catalogue of High Energy Accelerators, Tsukuba, 1989; C-96 = Compendium of Scientific Linacs CERN/PS 96-32 (DI); CC = CERN Courier; EPAC = European Particle Accelerator Conf.; NIM or NI&M = Nuclear Instruments and Methods; NPN Int. = Nuclear Physics News International; PAC = Particle Accelerator Conf. to the last – PAC'01(2001); 1 – 17th RUPAC = 1 – 17th Russian PAC's (1 – 17th СУЗЧ - Совещания по ускорителям заряженных частиц) from the 1st (Dubna, 1968) to 17th (Protvino, 2000).
AAA	AAA - Advanced Accelerator Applications is new LANL program (after Project of 100 mA CW APT terminated in October 2000) to develop an entirely SC (from 6.7 MeV RFQ) 600 MeV, 13.3 mA CW Linac. The main its goal is to demonstrate transmutation of nuclear waste. The 1st its stage is ADTF (*see here*) stand for taste of ATW technology based on 2- & 3-cell SC spoke cavities in low-β section up to 109 MeV, and then in high-β section – 5-cell AP-type SC elliptical cavities. Reports by R.W. Garnett, T.P. Wangler, F.L. Krawczyk, K.R. Crandall et al. on PAC-01: RPPH030, MPPH057, MPPH058, WPAH009, FPAH107; Spoke cavities: EPAC'02, WEBLA003; LINAC-02, MO479. *http://aaa.lanl/gov/aboutaaa.html*
Accelerators for Neutron Generators or Spallation Neutron Sources: short pulse, long pulse and CW. Facilities in phases: operational, design, proposal.	1. **IPNS** (ANL, USA): 50 MeV H^- Linac and 450 MeV RCS: 15 μA, 30 Hz, 7 kW, in operation since 1981, beam yield in 1997 is 63mAxhr; I.S.K. Gardner, "A Review of SNS Accelerators", EPAC-98, p. 98. 2. **KENS** (KEK, Japan): 40 MeV H^- Linac and 500 MeV PS: 4.6 μA, 20 Hz, 2.3 kW, (in operation since 1980, beam yield in 1997 is 4.5mAxhr), *ibid.*, p.98. 3. **MLNSCE** (*see here*, or LANSCE, LANL, USA): 800 MeV Linac and SR: 70 μA, 20 Hz, 56 kW, (since 1985, upgraded now to 200μA, and 30 Hz, yield in 1997 is 144 mAxhr), EPAC-98, p.98. Only a small part

of full 1mAavg. (17mA, 1 ms, 120 Hz pulse) output Linac current is used for this Neutron Source. Besides of that S. Wender (ADTTA-94, p.663) proposed to direct full 1mA 800 MeV beam on 4 MWth molten salt target surrounded blanket (with 3kg Pu) giving 21 n/p.

4. **ISIS** (RAL, UK): 70 MeV H^- Linac and 800 MeV PS: 200 μAavg., 50 Hz, 160 kW, (in operation s. 1985, beam yield in 1997 is 672 mAxhr), EPAC-98, p.98 (And J. Carpenter, "Accelerators in Action: SNS's", CC Vol. 36, March 1996, p. 4-8; and C-96, p.183). ISIS now is the world's most powerful spallation neutron source, see: "Neutrons in the material world", A.Taylor et al., CC, Vol. 40, No.3, April 2000, p.20. E-mail: *cwp45@isise.pl.ac.uk*
5. **SINQ** (PSI, Switzerland): 72 and 590 MeV Two Proton Cyclotrons: 1400 - 1520 μA, CW, 885 kW, (in operation since 1996, beam yield in 1997 is 500 mAxhr), EPAC-98, p.98 (and "Villigen World Record Cyclotron Beam Power", CC, Vol. 36, No.3, April/May 1996, p.5).
6. **SNS** (*see here*) project (Oak Ridge et al.): 1GeV, $130mA_{pulse}$, 1ms, 60 Hz, (~2mAavg.) H^- Linac and two Proton SR, EPAC-98, p.98; alternative design based on RCS: J. Wei et al., EPAC'00, p.981.
7. **JAERI/KEK Joint Project** (*see here*) will be included 400 MeV NC Linac (then 600 MeV) and RCS for transmutation researches. In the Project will use some parts manufactured for JHF and NSP proposals.
8. **ESS** (*see here*) European proposal: 1.33 GeV, 107 mA, 1.2 ms, 50 Hz, H^- Linac (3.7 mAavg., 5 MW beam current with two 175 MHz RFQ, 350 MHz DTL, funnel, 700 MHz CCL) and 2 Proton SR.
9. **IFMIF** (*see here*) Int. Project comprises complex of two 40 MeV, 125mA CW deuteron (D^+) 175 MHz Linacs, 3 lithium targets and irradiation chambers with neutron flux of 9.10^{13} n/cm^{2}s or 2 MW/m^2.
10. **CONCERT** (*see here*) - Project proposal of several European Laboratories of multi-users Combined Neutron Center for European Research Technology is NG based on HPPA with power about 5 ESS.
11. **AUSTRON II** (*see here*) proposal (Austria): 130 MeV, 33mA, 187μs, 25 Hz H^- Linac and 1.6 GeV Proton Synchrotron (0.13mAavg., 200 kW beam current), EPAC-98, p.98; and CC Vol.38, No.9, p.24, 1998.
12. **APT** (*see here*) proposal (LANL): 1.7 GeV, 100 mA CW, 170 MW Proton Linac with 10 MeV, 100 mA head part LEDA (*see here*).
13. **AAA** - Advanced Accelerator Applications (*see here*) is new LANL program (after APT) to develop a 600 MeV, 13.3 mA CW Linac.
14. **TRISPAL** (*see here*) proposal (CEA, France), 600 MeV, 352 MHz, 40mA CW, 24 MW Proton Linac: J.-M. Lagniel, "High Intensity Linac Studies in France", LINAC-98 p.706, " Beam Dynamics in RFQ", p.115 and M. Prome, "Major Projects for the Use of High Power Linacs", LINAC-96, p.9.
15. **TRASCO** (*see here*): C. Pagani et al., "Status of the INFN High Current SC p-Linac for Waste Transmutation", LINAC-98, p.1013.
16. **KOMAC** *(see here)*: At KAERI (Korea Atomic Energy Research Institute) from 1997 has been developed Project KOMAC with 20mA, 1 GeV proton / H^- pulse/CW Linac.

	17. **KURRI** (*see here*): a) Kyoto University Research Reactor Inst. has been proposed a hybrid system consists of 20 MeV deuteron Linac (or Cyclotron, S. Shiroya, APAC-01) and an existing small critical nuclear fuel assembly as a future neutron source; b) e^- 35 MeV, 0.5-6 A, 10 ns - 4μs, 240-480 Hz, 10-17 kW, 2-3 e13 n/s: G. Kim, PAC-99, p.2595; K. Kobayashi et al., Ann. Rep. Res. KURRI, Vol.22, 1989, p.142. 18. **ENERGY AMPLIFIER**: C. Rubbia and J.A. Rubio, "A Tentative Program towards a Full Scale Energy Amplifier", CERN/LHC/96-11 (EET). There are two options: 1 GeV, 25-30mA CW H^+ Linac or two 88 MHz Cyclotrons as 120 MeV H^+ Injector and 0.12-2.5 GeV, 352 MHz 10-12 mA CW SC Linac. 19. 25 MeV, 20 mA, 1.2μs, 100 Hz, e^- Linac since 1969 is in operation at Bariloche (Argentina) as Pulsed n-Source; C-96, p.3. 20. 2 MeV, 20mA, 20-160μs, 120 Hz Proton RFQ (type PL-2, production of AccSys Technology) since 1991 is in operation at Idaho State U. as Pulsed n-Source for biomedical uses; C-96, p.24. 21. **MIT/FAA**: 900keV/u D^+, 8 mAe, 425 MHz, 100μs, 640 Hz, 0.7 m RFQ (DL-1 AccSys Technology) since 1989 is in operation at MIT, Cambridge for n-Radiography; C-96, p.39. 22. **PL-2** Proton (or Deuteron) RFQ: 1.75 MeV /u (1.92m), 5-50μs, 150-1500 Hz, 25 mA, (0.5 mAavg.) was constructed at AccSys Technology and since 1994 is in operation with Be target at ORNL; C-96, p.48. 23. RCS-based 1-5 MW short-pulse SNS ANL Proposal: Y. Cho et al., PAC-97, p.953. 24. Deuteron or Proton 1.7 MeV/u, 1 mAe, 103 MHz (1.9m) IH Linac for PET Radio-Isotope production since 1991 is in operation at RLNR, Tokyo Inst. of Technology; C-96, p.91. 25. **GELINA**: e^- 200 MeV, 3 GHz, 12 A, 10 ns-2μs (1 ns, 100 A after compression), 800 Hz, 15 m, 7.5kW Linac since 1965 is in operation at Geel, Belgium, (3.4e13 n/s, G. Kim, PAC-99, p.2595); C-96, p.113. 26. **ORELA**: e^- 180 MeV, 20 A, 3 ns-1μs, 1 kHz, 11-70 kW, 2.2-14 e13 n/s at Oak Ridge, Knoxville, USA: G. Kim, PAC-99, p.2595. 27. Gaerttner-Linac at Troy, USA: e^- 25-60 MeV, 0.4-3 A, 15 ns-5μs, 0.3-0.5 kHz, 10 kW, 4 e13 n/s, G. Kim, PAC-99, p.2595. 28. "Applications of Spallation Neutron Scattering", W. Fischer, EPAC'02, THYLA001. 29. S. Fu et al., "Linac Design for China SNS", LINAC-02, MO419. "A Proton Accelerator Complex for SNS and Other Applications": (100 MeV Linac + 1 GeV Synchrotron), Y.U. Quingchang et al., IHEP, CAS, China, APAC-01, THP043 and THP013; D.M. Kong, Q. Yu et al., "Conceptional Study of HPPL for Clean Nuclear Power System", IHEP, CAS, APAC-98, p.110; G. Xialing et al., "The R&D Activities of HPPA Technology Related to ADS in China", CIAE, IHEP, PKU-IHIP, APAC-01, THAM02. 30. Joint ITEP, MRTI, IHEP, INR RAS, JINR, Efremov Institute et al. Proposal (1 GeV, 30 mA) described by O.V. Shvedov et al., "HPPL - Electronuclear System Driver", Preprint ITEP 35-99, 1999.

	31. "Construction of Small-Scale Multipurpose ADS at ITEP", A.M. Kozodaev et al., APAC-01, THP053 and EPAC'02, MOPRI110. 32. **MLUD-3**: Small-size 1.65 MeV/u, 97.8 MHz (p, D^+, H_3^+) Linac used as NG at Kharkov (in operation since 1975); C-96, p.182. 33. **MMFL**, (*see here* and C-96, p.158); L.V. Kravchuk, "MMFL for the Pulsed Neutron Source", ICANS-XIII, PSI 95-02, p.724 (1995); during the March 1998 run at the 1st time MMFL worked for the Pulse Neutron Source, S.K. Esin, "MMFL Operations and Improvements", LINAC-98, p.433. 34. "Technical Evaluation of 10 MW 1 GeV Linac for ADS Application", APAC-01, R.C. Sethi, Accelerator & Pulse Power Division, BARC, Mumbai, 400085, India. 35. **PFN:** Proposal of the Pohang Neutron Facility is being developed at Pohang Inst., Korea; G. Kim, PAC-99, p.2595; PAC-01, WPPH043. 36. **IREN** (*see here*): Proposal of NG 2.1e13 n/s with driver 200 MeV, 1.5A, 10 kW beam power e^- Linac is being developed at JINR. 37. S.A. Pande et al., Proposal: "100 MeV H+/H- Linac as Injector for 1 GeV ADS Linac or SNS Synchrotron", LINAC-02, MO483.
AD	Antiproton Decelerator (from 2.76 GeV to 5.31 MeV, D=54 m) at CERN; S. Baird et al., "Design Study of the AD", CERN/PS 96-43 (AR); Construction started – 1997, AC-98, p.11, first beam – see CC №7, 2000, p.9 and CC № 8, 2001, p.5; S. Maury, AD operation: PAC-01, ROPA008; T. Eriksson et al., "Two Years of AD Operation", EPAC'02, MOPLE081.
ADTF	ADTF (Accelerator-Driver (-en) Test Facility) is part of new (after APT) LANL program AAA (*see here*) to develop an entirely SC (from 6.7 MeV RFQ) 600 MeV, 13.3 mA CW Linac. The 1st stage is stand for taste of ATW technology based on 2- and 3-cell SC spoke cavities in low-β section, and 5-cell APT SC elliptical cavities in high-β section. PAC-01 Reports by R.W. Garnett, T.P. Wangler, F.L. Krawczyk, K.R. Crandall et al.: RPPH030, MPPH057, MPPH058, WPAH009 and EPAC'02, WEBLA003, THPDO003.
AFEL	20 MeV, 1.3 GHz, 20μs, 60 Hz e^- Linac for FEL is operated (since 1992) at LANL; C-96, p.42. E-mail: *sheff@lanl.gov*
AGS	Alternating Gradient Synchrotron on 24/33 GeV, (D=256.9 m), $6x10^{13}$ p/pulse (up to $4x10^{13}$ p/s), is operating since 1960 at BNL (Upton, NY); AC-98, p.72; L.Seubert, "Four decades in the proton stronghold", CC, Vol. 40 No.9, November 2000, p.29; T. Roser et al., "Upgrading AGS to 1 MW Proton Beam Power", PAC-01, RPPH020. E-mail: *alessi@bnl.gov*
AGS Booster	AGS Booster (since 1991) is proton synchrotron on 1.9-4 GeV for p and 95 MeV/n for Au used as injector AGS. AC-98, p.73.
AGS Linac (BNL Proton Linac)	AGS Linac on 200 MeV, 100 mA, 10 pulses/s (constructed 1967/1970, upgraded in 1989 and 1996) was used early as AGS proton injector, then as AGS Booster 35-40 mA H^- injector. C-96, p.56; AC-98, p.74. J.G.

	Alessi, "Upgrade of the BNL 200 MeV Linac", LINAC-96, p.773. The 200 MHz Linac with Iavg.=146μA (37mA in pulse 530μs, 7.5 Hz) has now a BIRC – Brookhaven Isotope Resource Center (early named BLIP) that used for Radio-Chemistry, Radio-Biology and Isotope Production; J. Alessi et al., polarized beam: LINAC-02, MO447. E-mail: *alessi@bnl.gov*
AHF	Three Projects of Advanced Hydrotest Facility dedicated for conducting of explosively-driven hydrodynamic experiments have been proposed by LANL, LLNL and Sandia (SNL) laboratories. They are completely different ones: 1) 25-50 GeV, 10^{11} p/pulse Proton Linac; 2) 16-20 MeV, 3-6 kA LIA Induction e^- Linac; and 3) 12 MeV, 40 kA Accelerator HERMES III type; A.I. Toepfer, LINAC-98, p.719. AHF extraction system: P.L. Walstrom et al., PAC-01, FPAH030.
AIRIX facility and PIVAIR	AIRIX flash X-Ray Radiographic Facility (CEA/CESTA, France) will consist of 60ns pulse e^- injector and 16 MeV Induction LIA (PIVAIR is its operating 8 MeV prototype). PAC-97, Reports 7P71-72; E. Merle et al.: "Status of AIRIX", PAC-99, p.3260; PAC-01, RPPH105 and "Progress with 2-3 kA AIRIX e^- beam", EPAC'02, TUPLE075; C-96, p.115.
ALADDIN	SLS at U. of Wisconsin SRC, J. Bisognano et al., PAC-01, WPPH090.
ALPI	Heavy Ion 6-20 MeV/u SC 80/160 MHz with 52 independently phased resonators CW Linac at INFN LNL, Legnaro Italy. Species from S to U; A. Danielli, EPAC-96, p.301; C-96, p.149. E-mail: *fortuna@lnl.infn.it*
ALS Facility, ALS Linac	Advanced Light Source: 56 MeV e^- Linac was constructed at LBNL in 1987/1991 to serve as preinjector for ALS Center Facility. C.H. Kim, C-96, p.8; C.C. Lo, PAC-99, p.3131; D.S. Robin et al.: PAC-01, WPPH076, -077 and "Superbends expand the scope of Berkeley's ALS", CC, Vol. 42, 2002, № 2, p.28 and "Successful Completion of the ALS " EPAC'02, TUALA002, TUPRI033, see too TUPRI019-20. E-mail: *chkim@lbl.gov*
ANKA	Angstrom Karlsruhe: it is Project of intense 0.2nm X-ray SRS Facility for advance technology processes (LIGA: Lithography, Electroforming and Plastic Molding); it will consist of 50 MeV, 10 mA e^- Linac, 500 MeV Booster and 2.5 GeV SR; H.O. Moser, EPAC-96, p.276; and EPAC-98, p.632, p.635; V.P. Belov, 15th RUPAC, V.2, p.374; D. Einfeld et al., "Commissioning of the SR of ANKA", EPAC-00, p.277, its status, p.619, "Test of the ANKA Injector", PAC-01, WPAH082; "Commissioning Results of ANKA", *ibid.* WPPH094; F. Perez et al., "ANKA – First Year of operation and Future Plans", EPAC'02, TUPLE026
ANL H^- Linac	50 MeV, 12mA Argonne National Laboratory IPNS (Intense Pulsed Neutron Source) H^- Injector Linac (s. 1962 ZGS Injector, then upgraded and now it is: H^- beam 50 mA, 70μs, 30 Hz); V. Stipp, "The ANL 50 MeV H^- Injector", LINAC-96, p.74. C-96, p.29. E-mail: *vstipp@anl.gov*
APS, APS Linac	Advanced Photon Source (at ANL, USA) is 7 GeV e^-/e^+ storage ring with e^- current up to 18 mA. From 1995 it produced 500 kW of X-ray power. A.H. Lumpkin et al., LINAC-98, p.p.529, 863, 899, 9988; S.V. Milton,

	"Results from the APS SASE FEL", EPAC-2000, WEP1B03; APS 450 MeV, 0.03μs, 48 pps, 60 Hz burst (each 0.5s) Injector Linac: C-96, p.25; EPAC'02: S.V. Milton, "The APS Progress and Update", TUPRI048; see too TUPRI001; L. Emery: possible APS upgrade by top-up operations, TUALA003. E-mail: *mwhite@aps.anl.gov*
APT Project and results of R&D on the APT/LEDA Facility Design	R&D of Accelerator Production of Tritium for the "APT Project" begin at LANL in 1990 and terminated in 2000. During this decade in LANL it was investigated main problems of creating CW Proton Linac on 1.7 (or 1.013) GeV, 100 mA beam current, (i.e. up to 170 MW average power, that will be enough for ~3 kg/year yield of tritium). By Project: RFQ, CCDTL and CCL up to 211MeV cavities are NC, then – SC. Constructed, tuned and tested with 100 mA CW proton beam 6.7 MeV LEDA (*see here*) would be the 1st part of APT Linac. Very valuable scientific and engineering achievements on problem of HPPL design reached at LANL during the work on APT/LEDA (they reached all goals, beside of long uninterrupted operation of injector) were described in a lot papers of many Accelerator's Conferences and are available now for a whole accelerator community. Details may be asked by: (*http://www.apt.lanl.gov*). This Project was terminated and transitioned to AAA (*see here*) in October 2000. Let us to list shortly the LANL papers to APT systems and problems (the same list has been prepared to impressive activity of 6 Labs. on SNS Project, *see here*). *Applications in Industry & Medicine:* LINAC-90: G.P. Lawrence, p.553; LINAC-98: M. Cappiello et al., p.636. *Beam Deflection & Focusing:* LINAC-96: E.A. Wadlinger, p.148; J.H. Billen et al., p.587; J.E. Stovall et al., p.686. *Beam Diagnostics & Instrumentation:* PAC-97: C.R. Rose et al., p.2047 and p.2093; J.D. Gilpatrick et al., p.2232; LINAC-98: J.F. O'Hara et al., p.186; J.D. Gilpatrick et al., p.532; R.E. Shafer, p.535; PAC-99: J.D. Gilpatrick et al., p.2214; EPAC'00: J.D. Gilpatrick et al., p.1717; LINAC-00: J.D. Gilpatrick et al., MOC15; Valdivez et al., MOC14; PAC-01: D. Barr et al., MPPH012; J. Kamperschroer et al., TPAH037; W. Selley et al., TPAH042-043; D. Barr et al., TPAH068; R.Shurter et al. TPAH071; J.D. Gilpatrick et al., WPAH097-098. *Beam Dynamics calculations and simulations, Codes:* LINAC-96: H. Takeda et al., p.683; R.W. Garnet et al., p.707; R. Ryne et al., p.234; PAC-97: L.M. Young, p.1920, p.2749; p.2752; S. Nath et al., p.1162; LINAC-98: R. Ryne, et al., p.701; H. Takeda et al., p.156; H.V. Smith et al., p.174; S.M. Lund et al., p.372; L.M. Young et al., p.421; E.M. Nelson, p.663; PAC-99: T.P. Wangler et al., p.611; LINAC-00: W.P. Lysenko et al., THB08; PAC-01: J. Kuzminski et al., MPPH132. *Beam Loss and Halo Problem:* LINAC-96: T.P. Wangler et al., p.372, p.375; LINAC-97: W. Lysenko et al., p.1917; LINAC-98: S.S. Kurennoy et al., p.121, p.466; T.P. Wangler et al., p.657; R.D. Ryne et al., p.827; LINAC-00: P.L. Colestock et al., THB07; PAC-01: RPAH032. *Beam (& Loss) Measurements:* LINAC-98: H.V. Smith et al., p.174; LINAC-00, M.E. Schulze et al., TUD12; PAC-01: Colestock et al., TPAH040; W. Lysenko et al., RPAH089; M. Schulze et al., ROPA011. *Behavior at Fault Conditions, RAMI:* PAC-95: K.C.D. Chan, p.822; PAC-97: E.R. Gray,

	p.1153; PAC-99: M. McCarthy et al., p.1061. *Bunching and Chopping of the Beam:* LINAC-96: E.A. Wadlinger, p.151; T.S.F. Wang et al., p.219; S.S. Kurennoy et al., p.1004. *CCDTL and CCL NC Cavities & Sections:* LINAC-96: S. Nath et al., p.689; LINAC-98: R.L. Wood et al., p.267; PAC-99: H. Bluem et al., p.3570; D.W. Christiansen et al., p.3573; P. Greninger, p.878; LINAC-00: G. Spalek et al., THD18; LINAC-00: R.L. Wood et al., THE16; PAC-01: T. Schultheiss et al., MPPH087; D. Christiansen et al., TPAH091. *CCL SC Cavities & Sections:* LINAC-96: K.C.D. Chan, p.580; PAC-97: F.L. Krawczuk et al., p.2914, p.3093; B.Rusnak et al., p.3096; LINAC-98: H. Safa, p.291; K.C.D. Chan, p.986; LINAC-00: K.C.D. Chan et al., THD17; PAC-01: T. Tajima et al., MPPH144-145. *Commissioning, Operating Regimes:* PAC-99: M.E. Schulze et al., p.3582; K.F. Johnson et al., p.3528; J.D. Schneider, p.503; J.D. Gilpatrick et al., p.2214; J. Power et al., p.2241; EPAC'00: H.V. Smith et al., p.969; PAC-01: H.V. Smith et al., RPPH031. *Common Consideration of the Project:* LINAC-90: T.P. Wangler et al., p.548; LINAC-96: J.D. Schneider, p.22; G.P. Lawrence et al., p.710; PAC-97: P.W. Lisowski, p.3780; G.P. Lawrence et al., p.1156; K.C.D. Chan et al., p.1150; LINAC-98: G.P. Lawrence, p.26; L.W. Funk, p.412; H.V. Smith et al., p.418; PAC-99: J.L. Anderson, p.571; J. Tooker et al., p.3567; LINAC-00: J. Tooker et al., TUD06; J.D. Schneider et al., TUD13; EPAC'00: J.D. Schneider, p.118. *Control electronics and systems, EPICS use:* LINAC-96: M.E. Thuot, p.611; LINAC-98: D.M. Moore et al., p.210; PAC-99: L. Dalesio et al., p.652; LINAC-00: Kwon et al., TUC13; T.S. Rohlev et al., TUC19; PAC-01: M. Pieck et al., MPPH014. *Control of resonance:* PAC-97: Y.M. Wang et al., p.2341; LINAC-98: R. Floersch et al., p.992; J. Sherman et al., p.890; PAC-99: R. Floersch et al., p.649. *Cooling and Heating by RF and Beam:* LINAC-98: P. Leslie et al., p.326; J.A. Waynert et al., p.950; H. Yip et al., p.1402; PAC-01: R.Valdiviezet al., TPAH044. *Cryomodule:* LINAC-98: B.M. Campbell et al., p.983; K.C.D. Chan et al., p.986; PAC-99: B.M. Campbell et al., p.971, p.1327; G. Hansen et al., p.1336. *Focusing RF and Magnetic Elements (NC and SC):* PAC-97: D. Barlow et al., p.3309; S. Kahn et al., p.3350; PAC-99: A. Harvey et al., p.3576; S. Chapelle et al., p.3758. *Front End:* LINAC-96: S. Nath et al., p.680. *HEBT, Beam Expansion, Targets, Beam Stops:* PAC-97: R.E.Shafer et al., p.83; C.R. Rose, p.1293; A. Jason et al., p.3728; D.B. Barlow et al., p.3309; LINAC-98: W.P. Lysenko et al., p.496; S. Chapelle et al., p.612; D.W. Doll et al., p.615; T.H. Van Hagan et al., p.618; PAC-99: D.W. Doll et al., p.1393. *HPRF Systems & Elements:* LINAC-96: M.T. Lynch, p.692; PAC-97: J. Bradley III et al., p.1147; D. Rees, p.2889; LINAC-98: M. Lynch, p.1021; D. Rees et al., p.231, p.564 and p. 920; W.T. Roybal et al., p.947; LINAC-00: W.T. Roybal et al., THE06. *Ion Source, Injection:* LINAC-96: J.D. Sherman et al, p.701; LINAC-98: J.D. Sherman et al, p.511; P.P. Balleyguier et al., p.869; J.D. Sherman et al, p.890; T. Zaugg et al., p.893; PAC-99: M. Thuot et al., p.349; J.D. Schneider, p.503 and PAC-01; WPAH010. *LEBT, Beam transportation, Matching of beam:* LINAC-96: E.A. Wadlinger et

	al., p.146; PAC-97: H.V. Smith et al., p.2746; L.M. Young, p.2749, p.2752; PAC-99: H.V. Smith et al., p.1929. *LEDA RFQ Beam parameters:* PAC-97: J.D. Schneider et al., p.1168; PAC-99: J. Power et al., p.2241; LINAC-00: L.J. Rybarcyk et al., TUD15; PAC-01: M. Schulze et al., ROPA011; H.V. Smith et al., RPPH031; W.P. Lysenko et al., LINAC-02, TH428. *LLRF, Control of amplitude and phase of RF:* LINAC-96: A.H. Regan, p.225; PAC-97: A.H. Regan et al., p.2338; LINAC-98: A.H. Regan et al., p.944; A.S. Rohlev et al., p.1016; PAC-99: A.H. Regan et al., p.1064; Y.-M. Wang et al., p.1070; PAC-01: M. McCarthy, MPPH010. *Mechanical, Engineering, Technological & Fabrication Solutions:* LINAC-96: R.L. Wood, p.752; PAC-97: L.D. Hansborough et al., p.2740; LINAC-98: R.L. Wood et al., p.267; D.Schrage et al., p.679; R. Valdiviez et al., p.597; PAC-99: R. Pearsons et al., p.3579; J. Kuzminski et al., p.968; S. Atencio et al., p.965; M.J. Cola et al., p.962; LINAC-00, J. Kuzminski et al., THD06; R. Valdivez et al., THD20; S. Ellis, TPAH113. *Power Supply and Distribution Systems:* LINAC-98: R.W. Street et al., p.216; PAC-99: E. Bowles et al., p.3755; J. Bradley III et al., p.1010. *Pulse Power Supply, Modulators, Pulse Generators:* PAC-97: C.R. Rose, p.1293; LINAC-98: J.T. Bradley III et al., p.561; S. Chapelle et al., p.612. *RF Windows & Loops (Power Couplers):* PAC-97: K.A. Cummings et al., p.3183; LINAC-98: P.P. Balleyguier et al., p.133; L.D. Daily, K.A. Cummings et al., p.297 and p.938; H. Safa, p.481; PAC-99: J. Gioia et al., p.1396; LINAC-00: K.A. Cummings et al., THE04; E.N. Schmierer et al., THD16; PAC-01: R. Rimmer et al., MPPH063; R.Bourque et al., MPPH131; E. Schmierer et al., MPPH142. *Tuning of RFQ and other cavities, their preparation:* LINAC-98: L.M. Young et al., p.270; M. Cole et al., p.279; G.O. Bolme et al., p.594; PAC-99: L.M. Young et al., p.881; E.N. Schmierer et al., p.977; LINAC-00, L.M. Young et al., TU201; J.D. Schneider et al, TUD13; L.J. Rybarchyk, TUD15; PAC-01: L.M. Young, WOAA004; L.J. Rybarchyk, FPAH107. *Vacuum Requirements and Systems:* PAC-97: S. Shen et al., p.3625; LINAC-98: K. Kishiyama et al., p.624; PAC-99: S. Shen et al., p.1333; G. Hansen et al., p.1336. Very many data of APT conception and systems design are considered on a number of different others Conferences (e.g., see P.W. Lisowski, ADTTA-99 pp.643-652), Workshops and Symposiums. Details may be asked by use: (*http://www.apt.lanl.gov*).
ARSA-350 and ARSA-1 MV	ARSA-1 MV is a pulsed accelerator based on a Marx generator developed at RFNC-VNIIEF (Sarov) for sterilization envelope with letters; 75 kg module with consumption 220 W produces 2 Mrad dose; N. Kalinovskaya et al., "Compact 1 MV ARSA Sterilizer", EPAC'02, MOPRI100; Tesla transformer ARSA-350 kV produces dose rate 10 MGy/s for X-rays and 100 GGy/s for e^- beam, *ibid.* MOPRI099.
ARUS	Yerevan 6 GeV, $3x10^{10}$ e^-/pulse, 3ms, 50 Hz, Electron Synchrotron D=69 m was constructed in 1967 at YerPhI (Armenia); AC-98, p.41. E-mail: *oksuzian@vx1.yerphi.am*

ASH	Accelerator SC for Hybrid: French Program on 1999-2002 to design best cryomodule with high field cavities, power couplers etc. for transfer found solution to the industry: J.-M. Lagniel, LINAC-98, p.706.
ASTRID SR	J.S. Nielson et al, "New Development at the ASTRID SR", D=40 m, 580 MeV, 200 mA stored e^-, and to 80 MeV up to 1μA stored ions (at ISA Univ. of Aarhus, Denmark) EPAC-98, p.406.
ATF (BNL)	Accelerator Test Facility at Brookhaven is (s.1991) a laser Linac complex (CO_2 laser system with 50 MeV e^- Linac that may be upgraded to up 100 MeV) dedicated for beam physics and radiation source R&D. X.J. Wang, "Brookhaven Accelerator Test Facility Energy Upgrade", LINAC-98, MO4001 and "Progress and Future in Brightness e^- Beam Sources" MOPB008, PAC-01; C-96 p.55. E-mail: *ilan@bnl.gov*
ATF (KEK) and its e- Injector Linac	Accelerator Test Facility at KEK is Electron Synchrotron with orbit length 138.6 m, that comprises (s.1995) of 1.54 GeV (2 GeV) S-band Linac and Damping Ring, M. Kihara, "The Japan Linear Collider Project", EPAC-98, p.63; CC Vol.37, No.8, p.16; AC-98, pp.52-53; C-96, p.95; J. Urakawa, EPAC-2000, FRXE04, p.63. E-mail: *takeda@kekvax.kek.jp*
ATLAS	Argonne Tandem Linear Accelerator System (s. 1978, ANL, USA) and CW, 97 MHz SC post-accelerator can now accelerate ions up to uranium to energies so high as 1.9 GeV. CC, Vol.36, No.4, June 1996, p.18; K.W. Shepard, "A Low Charge State RFQ", LINAC-98, p.382; and R.C. Pardo, *ibid.*, p.995; C-96, p.30. E-mail: *pardo@anlphy.phy.anl.gov*
ATR	ATR (at BNL, USA) is AGS – Transfer Line - to RHIC, which transport beams from Booster Synchrotron. The Booster received input beams from either a Tandem Van de Graaf (heavy ions) or Linac (protons); D. Bruno, "Overview of the ATR ", PAC-97, p.3449.
AURORA – 2D, AURORA – 2S	It is new racetrack type compact e^- SR Ring on 700 MeV, (stored current 300 mA), together with 7 T SC wiggler (λ=nm), that is very suitable for X-ray lithography at Lab. for Quantum Equipment Technology, Tanashi, Tokyo; G.H. Luo, T. Hori et al., EPAC-98, p.581, PAC-99, p.2400, and EPAC-00, WEP1A15.
AUSTRON II	It is proposal (Austria): 130 MeV, 33mA, 187μs, 25 Hz H^- Linac and 1.6 GeV Proton Synchrotron (0.13mAavg., 200 kW beam current) will be used as SNS; I.S.K. Gardner, EPAC-98, p.98; P.J. Bryant et al., "Austron", EPAC-00, p.108 and PAC-01, RPPH023; CC Vol.38, 1998, No.9, p.24.
AWA	Argonne Wakefield Accelerator: 18 MeV, 1.3 GHz, 25μs, 30 Hz, 7 kW e^- Linac (since 1994); in future will be up to 18 kA: J. Power et al., CC Vol. 42, 2002, #5, p.21 (AWA upgraded) and PAC-01, FPAH122; W. Gai et al., "Results from AWA Test Facility", LINAC-02, TH203; C-96, p.28. E-mail: *jds@hep.anl.gov*
Beijing e^+/e^- Linac	1.8 GeV, 2.8 GHz, 2.4 A (e^-), 9mA (e^+), 3μs, 25 Hz, 200 m Linac is operating (since 1987) as Injector of Beijing e^-/e^+ Collider; C-96, pp.67-68. E-mail: *wangj@bepc2.ihep.ac.cn*

Beijing FEL	Beijing FEL Facility Driver is 30 MeV, 0.2A, 2.8 GHz, 4.5μs, 10 Hz e^- Linac; C-96, p.69. E-mail: *xiejl@bepc3.ihep.ac.cn*
Beijing p Linac	Beijing 35 MeV, 60mA, 201 MHz, 150μs, 12.5 Hz Proton Linac (1985) for Physics and Medicine; C-96, p.70. E-mail: *luozh@bepc3.ihep.ac.cn*
BEPC and its Linac-Injector, BEPC-II	Beijing Electron-Positron Collider at IHEP on 1.55-2.0 GeV, (2.8 MeV - Project), luminosity 1.7×10^{31}, Beijing (Пекин), construction 1984 / 1988. Y. Wu "BEPC Upgrade and BTCF Design": EPAC-98, p.48; G. Pei, "BEPC Injector Upgrades", LINAC-98, Report MO4002; AC-98, p.45. Its 1.8GeV, 2.86 GHz, 3μs, 2.4A, 12.2 Hz, e^-/e^+ Injector: C-96, p.67. Z. Chuang, "Status of BEPC and Plans of BEPC-II", Report MOA02, APAC-01; and P. Guoxi, "BEPC-II Injector Design Consideration", Report THBM03, *ibid;* X. Yu, "Operation and Performance of the BEPC" EPAC'02, MOPRI022, C. Zhang: -021; G. Pei, "Overview of BEPCII Design", LINAC-02, MO406. E-mail: *wangj@bepc2.ihep.ac.cn*
BESSY II	It is 3rd generation of Synchrotron Radiation machines, which consists of 50 MeV Racetrack Microtron, 1.7 GeV Synchrotron and Storage Ring. Commissioning at 10mA beam began on April 1998, on 3 month ahead of schedule. D. Kramer et al, (Berlin Univ.) "Status of the High Brilliance Synchrotron Radiation Source BESSY II", EPAC-98, pp. 262, 436, 900, 1482, 2163. EPAC-2000, WEP3A03 to WEP3A11; PAC-01, WPPH067.
BIRC, BLIP	BIRC – Brookhaven Isotope Resource Center (early named BLIP – Brookhaven Linac Isotope Production Facility); A, Kponou et al., "A New Optical Design for the BNL Isotope Production Transport Line", LINAC-96, p.770.
BNL Linac	BNL 200 MeV H^- Injector Linac (1970, upgraded 1989, 1996); C-96, p.56 and *see here* AGS Linac. E-mail: *alessi@bnl.gov*
Boeing Linac and its Injector	Linac is ultraviolet-infrared FEL Driver (120 MeV, 100mA, 1.3 GHz, 7ps during 200μs, 30 Hz) at Seattle (1997); J.L. Adamski, PAC-95, p.251; C-96, p.61. Its 25 MeV, 230mA, 433 MHz, 800μs e^- Injector, *ibid*, p.62. E-mail: *vetamx00@ccmail.ca.boeing.com*
Booster SC and NC Linacs (Post-Accelerators)	1). Florida State U. HI 97 MHz Post-Tandem Linac (1987) consists of 12 SC independently phased cavities 10 MeV/u, 25nAe, Si^{8+}. Project description: E.G. Myers in NIM B40/41, 1989, p.904; C-96, p.23. E-mail: *myers@nucmar.physics.fsu.edu* 2). ATLAS - Argonne Tandem Linear Accelerator System and CW, 97 MHz SC Linac, *see here*. 3). Kansas State U. HI 3-5 MeV/u, 97 MHz Post-Tandem SC Linac (1989); C-96, p.34. E-mail: *tgray@phys.ksu.edu* 4). Sandia EN-Tandem HI Au^{28+}, (NC) Booster 1.9 MeV/u, 6m long Linac; C-96, p.40. E-mail: *hschon@somnet.sandia.gov* 5). Washington U. HI 5-15 MeV /u, 150 MHz Post-Tandem Linac (in operation since 1987) consists of 24 SC quarter wave resonators. Project description: D.W. Storm, IEEE NS-32, 1985, p.3262; its parameters:

	C-96, p.63. E-mail: *storm@npl.washington.edu* 6). ISOL – Isotope Separator On-Line: 1.05 MeV/u, 51 MHz, 5.6m, 50μs-3ms, up to 1kHz, 200μA for N^+ (and other ions and other q/A) Linac is operating at INS, Tokyo (since 1996); C-96, p.84. E-mail: *arai@ins.u-tokyoac.jp* 7). JAERI Tandem-Booster 30 Q/A MeV/u (from C to Au at q=12-28) 130 MHz Linac (operational since 1993); S. Takeuchi, LINAC-98, p.67. C-96, p.87. E-mail: *takeuchi@tdm.alph1.tokai.jaeri.go.jp* 8). TIT-IH-2 Booster HI Linac (3.4 MeV/u, 96 MHz, for ions: C, O, Cl, P) is operating (s. 1987) at Tokyo Inst. of Technology; C-96, p.89. E-mail: *thattori@nr.titech.ac.jp* 9). Heidelberg Heavy Ion 15 MeV/u, 108.5 MHz, 1μAe Booster for 12 MV Tandem (1979) at Max-Planck Inst.; C-96, p.143 and 2nd High Current Injector: C-96, p.144. E-mail: *rep@hering.mpi-hd.mpg.de* 10). SchweIN Heavy Ion Booster after MP 2.4MeV/u Tandem at Garching. It is 6 MeV/u 78/156 MHz IH Linac for ions: S^+, Cl^+, Ca^+, T^+, MnO^+, Fe^+, Ni^+, Ge^+ (s. 1976); U. Ratzinger et al., NIM A263, 1988, p.261; C-96, p.146. E-mail: *nolte@physik.tu-muenchen.de*
BTCF	Beijing Tau-Charm Factory, Y. Wu "BEPC Upgrade and BTCF Design", EPAC-98, p.48. E-mail: *ccappiello@lanl.gov*
BTW	16 MeV, 100mA, 1.6m Backward Traveling Wave e- Linac was built and tested (beam d<2mm) at Tsinghua U., H. Chen, LINAC-02, TH409.
CAMD Linac	200 MeV, 3 GHz, 25-70 A, 0.2μs e- Linac is (s. 1991) Injector for SLS (Syn. Light Source) in Center for Advanced Microstructures and Devices at Baton Rouge; C-96, p.35. E-mail: *bluem@rocamd.camd.lsu.edu*
CANDELA	3.5 MeV, 3 GHz, 1000 A, 15ps, 12.5 Hz e^- RF gun is Photo-injector for Laser at LAL, Orsay; C-96, p.127. E-mail: *travier@lalcls.in2p3.fr*
CANDLE	V. Tsakanov et al., "Status of 3 GeV Intermediate Energy Light Source Project CANDLE in Republic of Armenia"- R&D program on 3rd generation facility EPAC'02, TUPLE014-018, MOPLE078, MOPDO001.
CAT RCS and Linac-Injector	Project of 1 GeV, 100kW, 25 Hz RCS with 100 MeV, 10mA, 700MHz SFDTL Proton Linac-Injector for ADSS and pulse SNS applications is under design at CAT, Indore, India; LINAC-02: D.D. Bhawalkar et al., Common Project, MO414; M. Karmarkar et al., TH460; S.C. Joshi, A. Kumar et al., NC 10 MeV, 20mA DTL Linac with 350 MHz, 4.5 MeV, 25mA CW RFQ, MO475, TU416, TH470.
CDTC	Contraband Detection Technological Complex which consists of 433 MHz RFQ and APF IH cavities on 2.5-3.5 MeV deuteron beam is currently under construction at NIIEFA, St. Petersburg: EPAC'02, MOPRI104.
CEBAF (TJNAF or JLab)	On SC Continuous Electron Beam Accelerator Facility project parameters 4.0 GeV, 200μA CW was achieved. Output energy in August 1998 for e^-/e^+ raised to 4,5-5.0-5.5 GeV; C.E. Reece, "Achieving 800 kW CW Beam Power and Continuing Energy Improvements in CEBAF", Linac-98,

	TU4025; L. Merminga et al., "An Electron-Ion Collider Based on CEBAF", EPAC'02, THAGB001; L. Harwood, "Upgrading CEBAF to 12 GeV", LINAC-02, TH408; CC Vol.42, #4, p.19; C-96, p.60; AC-98, p.69. *http://www.jlab.org/* , E-mail: *xiejl@bepc3.ihep.ac.cn*
CELSIUS	Cooling with Electrons and Storing of Ions from the Uppsala 1.36 GeV Synchrotron (Storage Ring).M, Bengtsson et al., "New Developments at CELSIUS ", EPAC-98, p.514. S. Kullander, "Swedish accelerators take a look at the past", CC, Vol. 40 No.4, May 2000, p.20. D.Reistad, "Machine Studies at CELCIUS", EPAC-2000, MOP1B11, p.575.
CERN Linac2	50 MeV, 202 MHz, 180mA Proton Linac (CERN); E. Boltezar et al., "The New 50 MeV Linac", Linac-79, p.66; RFQ Modification - C.E. Hill et al., "Performance of the CERN Linac2 with a High Intensity Proton RFQ", Linac-94, p.175; Recent Operation – H. Charmot et al., "Operational Experience with the CERN Hadron Linacs", Linac-96, p.360; C.E. Hill et al., "Present Performance of the CERN Proton Linac", Linac-98, p.427; AC-98, p.12; C-96, p.173. E-mail: *ceh@ps.msm.cern.ch*
CERN Linac3	CERN Heavy Ion Linac, Ion Species – Pb^{53+}, 4.2 MeV/amu; Design – D. Warner,"CERN Heavy-Ion Facility Design Report", CERN 93-01, 1993; First Results – H. Haseroth, Pb Injector at CERN", Linac-96, p.283, Recent Operation - H. Charmot et al., "Operational Experience with the CERN Hadron Linacs", Linac-96, p.360; AC-98, p.13; C-96, p.175. E-mail: *ceh@ps.msm.cern.ch*
CERN SPS and PSB	Super Proton Synchrotron / heavy ion accelerator; 450 GeV; D.J. Simon, "The CERN PS Complex: a Versatile Particle Factory", EPAC-96, p.295; K. Schindl, "The PS Booster as Pre-Injector for LHC", Particle Accelerators, 1997, Vol.58 pp. 63-78; K. Schindl, "High Brightness Hadron Injector for TeV Colliders", Proc. of the HEACC'98, (Dubna); AC-98, pp.8-10.
CESR, CESR Linac	Cornell Electron-Positron Storage Ring – 6 GeV Collider with Luminosity $6x10^{32}$, constructed 1978 / 1979 at Cornell Univ. D. Rice, "CESR: Steps Toward a B Factory", EPAC-96, p.17; AC-98, p.59; CC, Vol.38, No.6, 1998, p.20; CC, Vol.42, #1 2002, p.13. Achieved peak luminosity of $1.1x10^{33}cm^{-2}s^{-1}$ with a total beam current675mA: D. Rubin et al., "CESR Status", PAC-01, RPPH122; LINAC-98, TH4044. CESR e^-/e^+ 350 MeV Injector Linac: C-96, p.50-51; D. Rice, "CESR-c – a Frontier Machine for QCD and Weak Decay Physics in the Charm Physics", EPAC'02, MORI005. E-mail: *ric@lns62.lns.cornell.edu*
CLIC *see too* **CTF3**	Compact Linear Collider (CERN). Study of proposed Project: C-96, pp.188-9; J.P. Delahaye, " CLIC a 0.5 to 5TeV e^+/e^- Compact Linear Collider", it will consists of two 13.75 km e^+ and e^- (30 GHz, 100 MV/m) Linacs and RT Ring, orbit length 768m. EPAC-98, p.58. CC, Vol.38, No.6, 1998, p.18; and "SILUND-21 as a CLIC Driver", 15th RUPAC, p. 58; V. Telnov et al., "CLIC 3-TeV Photon Collider Option", CERN-SL-2002-013 (AP) CLIC Note 508; F. Zimmermann et al., "Status of the

	CLIC Study", EPAC'02, MOPRI040; L. Rinolfi, LINAC-02, MO427.
CLIO	Centre Laser Infra-red Orsay 70 MeV; 3 GHz, 20A, 12μs, 50 Hz e^- Linac (1991) for FEL; C-96, p.125. E-mail: *chaput@lure.u-psud.fr*
CLS	Canadian Light Source – the 3rd generation machine with 250 MeV Linac and 2.9 GeV SR is under construction at Saskatoon: L. Dallin, PAC-01, WPPH092, -093. Praestegaard et al.: 2.9 GeV Booster Synchrotron for CLS has now been constructed and installed, PAC-01, FPAH117 and EPAC'02, TUPRI095; *see too* M.de Jong, *ibid.*, TOPA002.
COLLIDERS, ***see here:***	BEPC; BTCF; CESR; CLIC; DAFNE (DAPHNE); HERA; JLCP (JLC); KEKB; LEP2; LHC; Muon μ^+ μ^- Collider; NLC; PEP2; RHIC; SBLC; SLC; TESLA; TEVATRON; VLEPP; VLHC. *See too*: I. N. Meshkov, 16th RUPAC, Vol. 1, p. 9; K. Schindl, CC Vol.41, #5, 2001, p.6; PAC-01: R. Miller et al., FPAH062; S. Peggs et al., "Accelerator Physics Issues for Future Electron-Ion Colliders", MOPA008; J. Norem et al., "A Very Large Circular e^+e^- Collider", RPPH112; M. Tigner, "Review of Linear Collider Designs and Path to the Future", EPAC'02, MOZGB001; C. Adolphsen, "Review of SC vs. NC Accelerating Systems for Linear Colliders", *ibid.*, MOZGB003; E. Recepoglu et al., "Achievable Luminosity at Future Lepton-Hadron Colliders", EPAC'02, MOPLE074; LINAC-02: G.A. Loew, "Status of the 2nd Technical Review on Linear Colliders", MO102; D. Son, "Opportunity of High Energy Physics Research using the e^+e^- Linear Collider", FR203.
CONCERT	Project proposal of several European Laboratories of multi-users Combined Neutron Center for European Research Technology – is NG based on HPPA. The pulse 5-25% d.f., 1.3 GeV up to 25 MW Linac, it consists of: 104 mA H^+ and two 55 mA H^- lines funneling at 25 MeV and then ~ as in ESS but at 5 times more power. PAC-01: A. Mosnier, E. Klein, FOAC009; N. Pichoff et al., RPAH013 and FPAH098; B. Aune et al., RPPH021 and -022; S.N. Simrock, ROAA002; R. Maier, FZJ, "HPPLs, Applications and Design Concepts", EPAC'02, TUZGB004.
COSY Julich	Cooler Synchrotron at Julich is stochastic cooling system for both – transversal and longitudinal direction polarized p^- to max. momentum from 600keV/c to 3.3 GeV/c; its performance: U. Bechstedt, EPAC-98, p.541; EPAC-2000, MOP4B14; D. Prasuhn, "Status of COSY", PAC-01, RPPH054; SC Injector Linac: R. Maier et al., EPAC'02, WEPLE105-7, THPLE080-81, THPDO019; R. Maier et al., "SC Injector Linac Proposal" LINAC-02, TU482.
CPS	CERN Proton Synchrotron, 28 GeV, was commissioned in 1959, attained 2.7×10^{13} p/pulse in July 1997. D.J. Simon, "The CERN PS Complex as a Particle Factory", EPAC-96, p.295. AC, p.9; PS Staff, "40 years of CERN's Proton Synchrotron", CC Vol. 39, No.10, 1999, p.15.
CRITS RFQ	Chalk River Injector Test Stand was passed to LANL where it used in LEDA Program. LINAC-98, p.869, p.890; J.D. Schneider, "Installation CW RFQ at LANL", LINAC-94, p.149. C-96, p.49. E-mail:

	jsherman@lanl.gov
CRYRING	SR for ions from p^+ to $^{132}Xe^+$ at MSL, Stockholm: "Extending the Use of the CRYRING Storage Ring", A.Kallberg, EPAC-2000, p.545, and "Progress of the CRYRING Facility", EPAC'02, THPLE119.
CTF, CTF I, CTF II and CTF III (CTF3)	CLIC Test Facility, C-96, p.172. CTF I was operated from 1990-1995. The 2nd phase of the Compact Linear Collider (CLIC) Test Facility (CTF II) at CERN aims to demonstrate the feasibility of a linear e^-/e^+ collider based on 30 GHz technology using high-charge drive beam, parallel to the main beam, as the RF power source. I. Wilson et al., "Demonstration of Two Beam Acceleration in CTF II", LINAC-98, p.85, p.88. See also CC, Vol.38, No.6, 1998, p.18; and H.H. Braun, EPAC-2000, FRXE02, p.48; R. Corsini, "An Overview of the New CTF3", PAC-01 WOPA009; P. Royer et al., "Status of the CTF3 Commissioning", EPAC'02, MOPRI042; LINAC-02: E. Jensen, "CTF3 Drive Beam Accelerating Structure", MO401; R. Corsini, "Overview of CLIC and CTF3", TU201.
DARHT, DARHT-2 and DARHT ITS	Dual-Axis Radiographic Hydrodynamics Test Facility is under construction at Los Alamos by efforts of LANL, LLNL and LBNL. The facility will contain two e^- LIA accelerators (20 MeV, 60ns, 4kA bursts) arranged perpendicular to each other. H.L. Rutkowski, "An Induction Linac for the Second Phase of DARHT", Linac-98, Reports MO2001, -4033, -4054, TU4028, -4033, TH4056, TH4040; C-96, p.43. DARHT ITS: is 6 MeV, 3kA, 60ns single shot pulse (1991) Integrated Test Stand - engineering prototype for DARHT; C-96, p.44. Long pulses: M. Burns PAC-99, p.3257; PAC-01 WOAA008; LINAC-02: Y.-J. Chen et al., MO203; M.V. Zumbro et al., TU406; G.A. Westenskow et al., TU479. E-mail: *burns_michael_j@lanl.gov*
DAΦNE BOOSTER	DAΦNE Booster Ring (Accumulating Ring D=20 m) is Electron (Positron) Synchrotron on 510 MeV and 10^{11} e^-/s or e^-/pulse constructed at INFN-LNF (1993/1996), it serves as Injector for DAΦNE Collider. M. Preger et al, "Performance and Operation of the DAΦNE Accumulator", EPAC-98, p.415 and p.406; AC-98, p.24. G.Mazzitelli et al., "Data Handling of DAΦNE ", EPAC-2000, TUP1B04, TUP1B05, TUP1B06.
DAΦNE LINAC	DAΦNE Electron/Positron Linac on 700 MeV, 30 mA (e^-), 550 MeV, 70mA (e^+), 60 m length was constructed 1992/1996 and used as injector DAΦNE Booster (Accumulating) Ring at INFN LNF, Frascati Italy. R. Boni et al., EPAC-98, p.764. AC-98, p.25. C-96, pp.147-8. E-mail: *sannibale@lnf.infn.it*
DAΦNE, (DAFNE, DAPHNE)	Collider e^+/e^- on 2x0.51 GeV, 2x5 A (with e^+/e^- Linac and Booster or Accumulator ring - Frascati Phi-Factory) was constructed at INFN-LNF 1993 / 1997. AC-98, pp. 23-25; "DAΦNE: The First Φ Factory", EPAC-96, p.22; "Performances of DAΦNE ", EPAC-98, p.81. M.Zobov et al., "DAΦNE Performance", EPAC'00, p.43; "Status Report..." PAC-01, WOAB006, RPPH130; EPAC'02: "Luminosity Performance of DAFNE", MOPRI007, C. Ligi et al., "DAFNE Cryogenic System", MOPLE026; M.

	Incurvati, et al., "DAFNE Power Supply", MOPLE097.
DELSY	The Project of DELSY at Dubna, consists of 800 MeV 50mA e^- Linac and 1.2 GeV Electron Synchrotron with SR (C=136m, with 10/300mA) is being under development at JINR. It will be SRS of 3rd generation based on accelerator facility NIKHEF (Amsterdam) presented to JINR; V.A. Archipov et al., 17th RUPAC, Vol.1, p.11; I. Titkova et al., PAC-01, WPPH326; EPAC'02, TUPLE008; Atomnaya Energia, V.91, #4, p.300.
DELTA Injector-Linac	100 MeV, 3 GHz, 0.6A, 2-20ns, 100 Hz e^- Linac serves as injector of 1.5 GeV SRLS DELTA Facility at Dortmund U. (s. 1994); T. Weis, EPAC-96, p.834; EPAC-2000, WEP3A18, WEP3B03; G. Schmidt et al., "Status of the DELTA", EPAC'02, TUPRI006; C-96, p.137.E-mail: *weis@marvin.physik.uni-dortmund.de*
DESY	The Deutsche Electron Synchrotron: DESY – accelerator complex consisting of the HERA (30/820GeV e^- and p Collider - Storage Ring), DORIS 3 (since 1993 dedicated light source) and the injector and booster machines: Linac 1 (200 MeV e^-), Linac 2 with PIA (450 MeV e^+/e^-), Linac 3 (50 MeV H^-), Synchrotron DESY 2 (7 GeV e^+/e^-), proton Synchrotron DESY 3 (7.5 GeV p), PETRA 2 – injector for HERA.
DESY 2	Deutsche Electronen e^+/e^- Synchrotron on 7 GeV (now 8 GeV) is injector for DORIS and PETRA constructed in 1985 at Hamburg; AC-98, p.19.
DESY 3	7.5 GeV proton synchrotron - injector for PETRA 2, (1989); AC-98, p.20.
DFELL (MARK III)	Duke FEL Laboratory facility at Duke Univ. provides UHV from 1 GeV, 1 A SR, G. Swift et al., "Status of MARK III FEL", PAC-01: WPPH036, WPPH110, WPPH325.
DIAMOND	DIAMOND – 3 GeV, 500 MHz, C=340.8m Light Source Project was proposed in CLRC Daresbury Lab. J.A. Clarke, EPAC-98, p.614. In CC Vol.40, (2000) No.4, p.7 have been noted that their own SOLEIL Project France government was cancelled and decided instead to become a major partner in UK Diamond SRS Project that should be operational in 2006 at RAL (Rutherford Lab., Oxford); PAC-01: M Poole et al., TOPA004, WPPH070; V. Suller, "Status of the DIAMOND Project", EPAC'02: TUPLE002 - 004, -028 TUPRI097, M. Poole et al., "DIAMOND Beam Losses", MOPLE079.
DORIS 3	Collider e^+/e^- on 4.5 GeV at DESY (1973, Hamburg). AC-98, p.18.
Dragon-I	Dragon-I Facility is 3kA, 20 MeV, 90ns LIA being built at Inst. of Fluid Phys. CAEP, China. It consists of –2.0 MV / +1.5 MV injector and 68 accelerating cavities, J.J. Deng et al., LINAC-02, MO403.
DUKE Linac, DUKE FEL Facility, OK-5/ DUKE SR FEL	295 MeV, 0.2 A, 30ns - 1μs, 5 Hz, 2.8 GHz e^- Linac - Injector (1994) of SR for FEL at Durham; see paper P.G. O'Shea in PAC-95; P. Wang et al., "Status Report of Duke FEL Facility", PAC-01, WPPH325, RPPH124 and O. Shevchenko, WPPH330; C-96, p.57. High intensity γ-ray source based on OK-5/ DUKE SR FEL is in operation since 1996: V. Litvinenko,

	EPAC'02, TUPRI090, -091, 092. E-mail: *ashea@fel.duke.edu*
ECLISSE	The ECLISSE Project (ECR ion source Coupled to a Laser Ion Source for charge State Enhancement) have been proposed at INFN-LNS (Catania), IPASCR (Prague), IPPLM (Poland) and JINR (Dubna): S. Gammino et al., EPAC'02, THPRI007..
EGP-15	Status and Development of the 6.5 MV Tandem (IPPE, Obninsk), V.A. Romanov, EPAC-98, p.693.
ELBE	P. Michel et al., EPAC'02, TUPRI110: at Forschungszentrum Rossendorf in 2001 was put into operation ELBE - radiation source based on 40 MeV 1 mA CW SC Linac; it will be used as a driver for several FELs etc; First 20 MeV operation: LINAC-02, TU430.
Electron and e^+ Linacs for scientific purposes (without of names, from C-96)	1) 25 MeV; 1.2μs, 100 Hz, 20mA is operated at Bariloche (Argentina) as Pulsed n-Source; C-96, p.3. E-mail: *granada@cab.cnea.edu.ar* 2) 300 MeV, 2μs, 360 Hz, 220mA is operated (1965) at Saskatchewan U. (Canada); C-96, p.6. E-mail: *jjm@skatter.usask.ca* 3) 165 MeV, 1-20ns, 1440 Hz, 10 A, or 3μs, 300 Hz, 0.8 A is operated (1969) at LLNL (USA); C-96, p.10. E-mail: *tcovan@llnl.gov* 4) 100 MeV, 1μs, 60 Hz, 2.8 GHz, is operated (1967) at Monterey (USA); C-96, p.15. E-mail: *maruyama@physics.nps.navy.mil* 5) 22 MeV, 5-30ps up to 1kA, 100ns-3μs, 1.5-3 A(peak), 1-800 Hz, (1968), at ANL (USA); C-96, p.27. E-mail: *jonah@anlchm.chm.anl.gov* 6) 9.5 MeV, 2ns-1.5μs, 1- 60 Hz, 4A, 4kW, 2.8 GHz, is operated (1994) at Notre Dame(USA); C-96, p.33. E-mail: *bentley.1@nd.edu* 7) 30 MeV, 4.5μs, 10 Hz, 0.2 A, 2.8 GHz FEL-Driver for e^- Linac (1991), at IHEP, Beijing, C-96, p.69. E-mail: *xiejl@bepc3.ihep.ac.cn* 8) 45 MeV, 10ns-3μs, 200 Hz, 2 A, 2.8 GHz for e^- Linac operating (1974) at Hokkaido U.; C-96, p.79. E-mail: *tem@hune.hokudai.ac.jp* 9) 300 MeV, 3μs, 300 Hz, 100mA, 2.8 GHz, e^- Linac operating (1967) at Tohoku U.; C-96, p.82. E-mail: *oyamada@thkln1.lns.tohoku.ac.jp* 10) 120 MeV, 2.8 GHz, 5-10μs, 50-100 Hz, 1mAavg., 20m e^- Linac is tuning (1996) at Yerevan; C-96, p.108. E-mail: *oksuzian@vx1.yerphy.am* 11) 75 MeV, 2.8 GHz, 0.5-1μs, 50 Hz, 10μAavg., 25m e^- Linac operating (1965) at Yerevan; C-96, p.109. E-mail: *oksuzian@vx1.yerphy.am* 12) 15 MeV, 3 GHz, 14μs, 2-5kHz, 0.1 A, 7m e^- Linac operated (s.1984) at Gent, Belgium; C-96, p.114. E-mail: *wim.mondelaers@rug.ac.be* 13) 15 MeV, 1.3 GHz, 6 A, 2ns-2μs, 50 Hz, 5m length e^- Linac (s. 1969, at Hahn-Meitner Inst.) ; C-96, p.129. E-mail: *janata@hmi.de*
ELECTRONICA U-006, (-3)	1) U-006 is 10 MeV, 1.9 GHz, 5μs, 1-200 Hz e^- Linac operating s. 1990 at YerPhI (Armenia,); C-96, p.107. And 2) U-003: 5 MeV, 1.9 GHz, 5μs, 1-200 Hz e^- Linac is operating since 1989 at YerPhI; C-96, p.111.
ELETTRA and its Injectors	ELETTRA (Trieste, Italy) is 2 GeV (circumference 259.2m) Synchrotron Light Source of 3rd generation and the world's brightest sources of VUV and soft X-ray radiation. J. Bocehetta, "Operational Experience with ELETTRA", EPAC-96, p.76. Preinjector 100 MeV, 3 GHz, 10-300ns, 10

	Hz e^- NC Linac and 1.2 GeV, 3 GHz, 20mA Main Injector NC Linac; C-96, pp.150-152. C.J. Bocchetta, EPAC-98, p.568, p.587; C.J. Bocchetta, EPAC'02, TUPRI013. E-mail: *carlo.rossi@elettra.trieste.it*
ELFE	Electron Laboratory For Europe - G. Geschonke & E. Keil Proposal (CERN SL/98-060 RF) of Recirculating 25 GeV, 150μA, quasi-CW e Accelerator, using dismounted the LEP SC RF cavities. See too CERN NuPECC 99-10, Ed. H, Burkhardt.
ELIOS	100 MeV, 3 GHz, 11mA, 5-300 ns, 10 Hz NC e^- Linac will be Injector for Booster of SOLEIL SR; C-96, p.124. E-mail: *chaput@lure.u-psud.fr*
ELISA	S.P. Moller, (Univ. of Aarhus, Denmark),"Design and first operation of the 25keV Electrostatic Storage Ring ELISA", C= 7.6 m. EPAC-98, p.73.
ELSA, ELSA-2	20 MeV, 433 MHz, 500A, 150μs, 20 Hz e^- Linac for FEL is operating since 1991 at CEA, France; C-96, p.117. P. Guimbal et al., "Status of the ELSA-2 Project", EPAC'02, TUPRI066-7. E-mail: *joly@bruyeres.cea.fr*
ELSA Injector Linac 1 and Linac 2	ELSA (Electron Stretcher Accelerator – Synchrotron) Injectors are: 1) 20 MeV, 3 GHz, 0.8A, 1μs, 50 Hz e^- Linac 1 (s. 1966) at Bonn U.; C-96, p.131. And 2) 30 MeV, 3 GHz, 0.6A, 1μs, 50 Hz e^- Linac 2 (s. 1995) at Bonn U.; C-96, p.132. E-mail: *husmann@axpib.physik.uni-bonn.de*
ELYSE	M. Gaillard, et al., "A High Charge Photoinjector for the Pulsed Radiolysis Facility - ELYSE" (at LAL, Univ. de Paris), it will produce 4-9 MeV, 1nC, 5ps width pulses of e^- beam. Linac-98, TU4102; T. Garvey et al., "ELYSE – An Intense Electron Linac for Pulsed Radiolysis Research", EPAC'02, THBLA003.
EOA	20 TeV Earth Orbiting Accelerator: R. Mainardi, PAC-01, FPAH155.
EPLUS	Project of 340 MeV, 3 GHz, 0.7A, 5-300 ns, 10 Hz e^+/e^- Linac for e^+ production and injection in SOLEIL SR at LURE, Orsay; C-96, pp.122-123.; R. Chaput, "Linac Injector for SOLEIL", EPAC-96, p.801. E-mail: *chaput@lure.u-psud.fr*
ERL	G. Kulipanov, A.N. Skrinsky, N.A. Vinokurov, "Energy Recirculation Linacs: an Alternative Light Source Concept", EPAC'02, TUXLA003; Lia Merminga, "Review of ERLs Projects, their Physics and Technology Issues", LINAC-02, TH302; E.J. Minehara, "JAERI ERL", *ibid.*, TH404.
ESRF and its Preinjector	European Synchrotron Radiation Facility (C= 850 m) at CEN (Grenoble, France) is the 3rd generation of Synchrotron Radiation machines. J.M. Lefebvre, "Higher Brilliance at the ESRF", EPAC-96, p.67. Its Preinjector 200 MeV, 3 GHz, 20mA, 2ns-1.2μs, 10 Hz e^- Linac (1991); L. Hardy, "Recent Developments at ESRF", PAC-01, WPPH072; A. Roperi et al., "Latest Developments at the ESRF", EPAC'02, TUPRI002; C-96, p.118.
ESS	Project of European Spallation Source (at KFA Julich) consists of 1.33 GeV, 107mA, 1.2 ms, 50 Hz (3.7mAavg., 5 MW) Proton (H^-) Linac and two compressor Storage Rings. I.S.K. Gardner, "Status of the ESS Design Study", PAC-97, p.988; Linac-98, TU4056, TH4057 (70mA, 1.2 ms, 50

	Hz, 120 mA/cm^2 Volume H$^-$ Ion Source). W.F. Braeutigam, "Design of SC Linac as Option for ESS", PAC-99, p.3549, p.959 and "Description and Results of the Current R&D of the ESS at FZ-Juelich", ADTTA' 01; EPAC'02: Y. Senichev et al., "Analysis of NC and SC Options for ESS Front-End", THPLE043-044, TUPLE091 E. Zaplatin et al., "Low β SC H-Cavity for ESS", THPDO018; R. Maier, EPAC'02, TUZGB004.
ETA II	6 MeV, 2kA, 70ns, 1kHz e$^-$ LIA (Induction Linac) constructed (1989) at LBNL; C-96, p.12. E-mail: *gw@llnl.gov*
ETOILE	Carbo-Theraphy project ETOILE at CEA DSM and IPN, Orsay is based on production of up to 400 MeV/uma Carbon and 220 MeV proton beams using earlier CERN synchrotron design "PIMMS"; the aim is to treat 1000 patients/year; F. Meot, J. Beebe-Wang et al., EPAC'02, MOPRI080, -081.
EURISOL	EURISOL Collaboration in 2002 y. accept as Driver 1 GeV, 5 MW CW Proton Linac with possible upgrade to 2 GeV: J.-L. Biarrotte et al., EPAC'02, THPLE039. Besides of that SC Reaccelerator Linac for acceleration RIB up to 100 MeV/u (for ^{132}Sn) has been studied: A. Facco et al., THPLE040-041; (*see http://www.ganil.fr/eurisol*)
FABRE Project	It will advanced multi-cell photo-injector for delivering 1 nC, 0.5 mm.mrad bunches at 20 MeV for Synchrotron Trieste. L.Serafini, "The FABRE Project: Design and Construction of an Integrated Photo-Injector for Bright Electron Beam Production", EPAC-2000, Report MOP1B16.
FAKEL	*See here*: Linac-60.
FELI	Free Electron Laser Research Institute 165 MeV, 80 A, 2.8 GHz, 24μs, 10 Hz e$^-$ Linac in operation s. 1994 at Osaca; T, Tomimasu, NIM, June 1996 and NIM, A375, p.626; C-96, p.72.
FELIX, FELICE	Free Electron Laser for Infrared Experiments is 45 MeV, 0.2 A, 3 GHz, 20μs, 10 Hz e$^-$ Linac - FEL-Driver (s.1991) at Netherlands; FELICE is a new FEL for Intra-Cavity Experiments (on a base FELIX): B.L. Militsyn et al., EPAC'02, TUPRI046. C-96, p.153. E-mail: *meer@rijnh.nl*
Fermilab 400 MeV Proton Linac	FNAL 200 MeV, up to 250-300mA Proton Linac was constructed 1968/1970, then it upgraded 1989/1993 and achieved energy 401 MeV at 50mA H$^-$ ions. It is part of Tevatron (*see here*) and served as Injector for 8 GeV PS Booster Synchrotron. AC-98, p.67; C.W. Schmidt, "Commissioning of the 400 MeV Linac at Fermilab", EPAC-94, LINAC-96, p.329; "Fermilab Linac Operations, Studies and Improvements", LINAC-98, TU4019. C-96, p.31. E-mail: *cschmidt@fnal.gov*
Fermilab Accumulator and Recycler Ring	It is 8 GeV Proton Synchrotron (Antiproton Storage Ring D=505 m) constructed 1982/1985, it is part of Tevatron (*see here*) and served as Injector for Main Ring. AC-98, p.65; Recycler Ring with PM is build to store antiprotons produced in AR, S. Mishra, EPAC'02, MOPLE035.
Fermilab Booster	8-10 GeV Proton Synchrotron (D=151 m), it is part of Tevatron (*see here*) and served as antiproton source and Injector for Fermilab Main Ring. AC-

	98, p.66; R.C. Weber, plans to increase x10 intensity: PAC-01, WPPH057. E-mail: *webber@fnal.gov*
Fermilab Debuncher	It is 8 GeV Proton Synchrotron (D=477 m) and it is a part of Tevatron (*see here*) and serves as Antiproton Injector for outer relative it Accumulator Ring (D=505 m). AC-98, p.64.
Fermilab Main Injector and Recycler Ring	150 GeV Proton Synchrotron Ring D=1056 m that will be Tevatron's Injector started at FNAL in 2000. The goal is to reach $L=8x10^{31}cm^{-2}s^{-1}$: K. Koba, PAC-01, MOPA005; RR: M Hu et al., MOPA006. AC-98, p.63.
FNAL Proton Driver	Fermilab Proton Driver Design Study has been completed at FNAL. It will be 16 GeV 1 MW, 1 ns bunch length RCS which would replace the current Booster; W. Chou et al., PAC-01, ROPA012 and APAC-01, THBM01; G.W. Foster: Comparison of 8 GeV PS v. SC Linac, LINAC-02, FR202.
FNAL 400 MeV **LINAC and Project of 1 GeV LINAC**	A proposed Linac injector for a new proton source complex at Fermilab would be sized to accelerate ~100mA of H^- beam in ~200 μs pulse at 15 Hz repetition rate (10^{14}ppp). An alternative proposal is to add 600 MeV, 805 MHz SCC Linac to the existing 400 MeV Linac. C.W. Schmidt et al., "1 GeV Linac at Fermilab", LINAC-98, TU4009 and PAC-99, WEA113. PAC-01: K. Koba, " Main Injector", MOPA005 and D. Young, FPAH102.
FXR	16-19 MeV, 2.5kA, 60-80ns (1980/1982) e^- beam LIA for production of X-rays at LLNL; C-96, p.11.
Gaertner	Gaertner 90 MeV, 1.3 GHz, 15ns-5μs, up to 3A e^- Linac for research at Troy NY (s. 1960); C-96, p.53. E-mail: *brandt@rpi.edu*
GELINA	200 MeV, 3 GHz, 12 A, 0.01-2μs, 800 Hz e^- Linac for n-physics at Geel (1965, Belgium), C-96, p.113.
GENEPI	(Generateur de Neutrons Pulses Intenses). J.M. De Conto " GENEPI: A High Intensity Deuteron Accelerator for Pulse Neutron Production", EPAC–98, p.685. It is HV 240 kV, ~1μs, up to 3 kHz rep. rate, 50mA pulse (200μAavg.) current D-T neutron generator, that will be used (after 1999) in Caradashe (France) with exp. reactor MASURCA.
HELIOS-1, (-2)	HELIOS-1 and -2 are SC 700 MeV Compact Synchrotrons use as SRS for X-ray lithography, constructed at Oxford and CLRC Daresbury Lab., UK; R. Anderson, EPAC-98, p.259.
HERA	HERA is a 6-km orbit length proton/electron (positron) double Ring Collider constructed 1984/1990 at DESY (Hamburg). The proton and electron (positron) beams are accelerated up to 820 and 27.5 GeV respectively (since 1992) and collide at two IP; W. Bialowons, "Status of HERA", EPAC-96, p.3; E. Gianfelice-Wendt, "HERA Upgrade Plans", EPAC-98, p.118; AC-98, p.16; G.H. Hoffstaetter, "Future Possibilities for HERA", EPAC-2000, Report MOZE04, p.13; F. Willeke, "HERA Recommissioning", EPAC'02, TUYGB001.
HIF Linac or	On a phase of feasibility study of Bi^+ ions 10 GeV, 400 mA Linac for Heavy Ion (Driven) Inertial Fusion facility proposed by H. Deitinghoff,

HIDIF Linac	H. Klein et al., "Parameter Study for a High Current Heavy Ion Linac", LINAC-98, Report MO 4015; "The HIDIF-Study", Report GSI-98-06; H. Zimmermann et al., "Funneling with two-beam RFQ", PAC-01, FPAH103.
HIL for HLS	HIL – HLS Injector Linac, C-96, p.71. HLS – Hefei Light Source. See here: "UST 200 MeV e^- Linac". E-mail: *sdong@mail.nsrl.ustc.edu.cn*
HIMAC and its Injector at NIRS	6 MeV/u, 100 MHz Heavy Ion (Ar^{6+}-Ar^{18+}, 6 MeV/u, 200μAe, 100 MHz, 300μs, 3 Hz) Medical Accelerator at National Institute of Radiological Science (in operation s. 1993) at Chiba have already (1998) been treated using carbon beams, but have possibility to use ions from protons to Xe. Y. Sato, "Recent Developments at NIRS-HIMAC Injector", LINAC-98, MO4014; C-96, p.75. K.Noda et al., 'Commissioning of Electron Cooler for Medical and other Application at HIMAC', EPAC-2000, TUP4A01; N. Kanazawa, "Present Status of the RIB Project in HIMAC", EPAC'02, MOPRI090. E-mail: *yamada_s@nirs.go.jp*
HIRFL and HIRFL-CSR	Heavy Ion Research Facility at Lanzhou and Cooling Storage Ring; HIRFL-CSR is multipurpose Cooling SR System, it consists of a main ring (CSRm, L=161.2m) and experimental ring (CSRe, L=120.9m), two cyclotrons: SFC (k=69) and SSC (k=450) will be provided injection for next acceleration about 40 ion species from C^{6+} (25-900 MeV/u) to U^{90+} (25-900 MeV/u): Y.F. Wang et al., APAC-98, p.232; W. Zhan et al., p.342 and p.605; "Status of HIRFL & CSR Project", APAC-01, MOD04.
HLS	Operational Hefei Light Source at NSRL consists of 200 MeV e^- Linac, HEBT and 800 MeV SR. PAC-01: W. Li, MPPH018, G. Li, WPPH307; B. Sun et al., EPAC'02, THPRI050-051; L. Shang et al., "The Upgrading of HLS Linac Modulators", LINAC-02, TU451.
HPPA, HPPLs (review of proton or H^- HPPA projects and problems)	1. I.M. Kapchinsky, (ITEP), "High Current Ion Linear Accelerators", Uspehi Fiz. Nauk, Vol. 132, #4, Dec. 1980, p.639-661, (in Russian). 2. R.A. Jameson, (LANL), "High Intensity Linacs Development Topics for Panel Discussion on Nuclear Energy Research and Accelerators – Future Prospects", Proc. of the 2nd Int. Symp. on Advanced Nuclear Energy Research, Mito, 1990, p.163. 3. D. Liska et al., (LANL), "Special Design Problems and Solutions for High Powered Continuous Duty Linacs", PAC-93, p.1718. 4. S.O. Schriber, (LANL), "Survey of Proposed High Intensity Accelerators and their Applications", EPAC-94, p.213. 5. M. Reiser, (U. of Maryland), "Theory and Design of Charge Particle Beams", John Willy & Sons, 1994. 6. H. Klein, (IAP), "Spallation Neutron Sources", LINAC-94, p.322. 7. M. Mizumoto, (JAERI),"Accelerators for Nuclear Waste Transmutation", LINAC-94, p.317. 8. M. Prome, (CEA/DSM), "Major Projects for the Use of High Power Linacs", LINAC-96, p.9.

9. Y. Yamazaki, (KEK), LINAC-92, p.580 and "Design Issues for High-Intensity, High-Energy Proton Accelerators", LINAC-96, p.592; "High Intensity Proton Accelerators for JKJ Project", EPAC'00, THOAF201.

10. R.A. Jameson, (LANL), "Discussion of SC and RT High Intensity Linacs", EPAC-96, p. 210.

11. K. Bongardt and M. Pabst, (FZ, Juelich), "Accelerator Physics of High Intensity Proton Linacs", EPAC-96, p.158.

12. A. Pisent (INFN), "A 100 MeV SC Proton Linac: Beam Dynamics Issues", LINAC-98, Report MO4010.

13. P. Pierini et al., (INFN), "Beam Dynamics in a High Current (25mA, 100 MeV – 1.6 GeV) SC Proton Linac for Waste Transmutation and Energy Production", *ibid.*, Report MO4046.

14. J.-M. Lagniel, (CEA-Saclay), "A Review of Linacs and Beam Transport Systems for Transmutation", EPAC-98, p.93; "High-Intensity Linac Studies in France", *ibid.*, p.706.

15. CERN Symposium on R&D for High Intensity Proton Accelerators. Dec. 6-7, 1999.

16. J.D. Schneider, (LANL), "Overview of High Power CW Proton Accelerators", EPAC'00, THXF203. E-mail: *jdschneider@lanl.gov*

17. J.-M. Lagniel, (CEA-Saclay), "High Power Proton Linac for a Multi-User Facility", EPAC'00, THP5B05.

18. Yu. Senichev et al., (FZJ, Julich): "NC and SC Linacs for SNS: Main Problems and Possible Solutions", EPAC'00, THP3B17.

19. J.-M. Lagniel, (CEA-Saclay), "Linac Architecture for High Power Proton Sources", LINAC-00, FR103.

20. N.V. Lazarev and A.M. Kozodaev, (ITEP), "Super-Power Proton Linacs for NG and ADS Facilities (review of projects)", Atomnaya Energia, Vol.89, # 6, December 2000, p.440-454.

21. T. Roser, (BNL), "Production of High Brightness Proton Bunches", PAC-01, FOAC001.

22. R. Maier, (FZJ, Julich), "High Power Proton Linacs, Applications and Design Concepts", EPAC'02, TUZGB004.

23. I. Hofmann, (GSI), "Review of Beam Dynamics in High Intensity Linacs", EPAC'02, WEYGB001.

24. A. Mosnier, (CEA-Saclay), "SC Linac for CONCERT Facility", PAC-01, RPPH021, "Control of SCR in HPPLs", EPAC'02, THXLA001.

25. Th. Stammbach, (PSI, Villigen), "Cyclotron Accelerators, Performance and New Developments", EPAC'02, FRXGB02.

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	upgrade to 2 GeV: EPAC'02, THPLE039. 27. B.H. Choi, (KAERI), "HPPL in Korea", LINAC-02, MO301. 28. D.D. Bhawalkar et al., (CAT, Indore), "Indian Programme to Develop HPPL for ADSS", LINAC-02, MO414. 29. A. Mosnier, (CEA-Saclay), "Survey of HPPLs", LINAC-02, FR201. 30. M. Pabst and K. Bongardt (FZJ), "Beam Dynamics in SC HPPL", LINAC-02, TU436. 31. F. Gerigk (RAL), "High Current Linac Design with Examples of Resonances and Halo", LINAC-02, TH103. 32. A Sauer, H. Klein et al., (IAP, Fr. am M.), "Beam Dynamics Layout of H-Type DTLs for Intense Light Ion Beams", LINAC-02, TH422.
HRIBF	Holifield Radioactive Ion Beam Facility at ORNL; Y. Zhang, G.D. Alton, et al., "A Low-Charge-State (and "A High-Charge-State...") Acceleration Scheme for Potential Upgrade of the HRIBF": a post accelerator system of short-lived radioactive ion beams consists of 12.5 MHz NC RFQ, 25 MHz NC IH, 50 MHz SC IH, 100 MHz SC IH, 100 MHz and 200 MHz SC QWR sections, PAC-01, G. Alton, Reports FPAH088, WPAH017 & -018.
HSI	Hoch Storm (High Current) Injector: In 1999 at GSI the 1.4 MeV/u prestripper section will be replaced by the HSI with an accepted mass over charge ratio for heavy ions up to 65 at d.f. raised up to 2%. A 36 MHz RFQ and two IH drift tube tanks will replace the four tank Wideroe section. W. Vinzenz, LINAC-98, Report MO4070.
I-2	Proton Linac on 24.6 MeV since 1967 is Injector the 2nd (after Van de Graaf EG-5) of the U-10 Synchrotron at ITEP (Moscow). Two-cavities ($2\beta\lambda$ and $\beta\lambda$, length 6 and 12 m, 148.5 MHz) Linac constructed 1962/1966, its preinjector has 700 kV pulse (1ms) transformer supply. Leader of the Project was Prof. I. M. Kapchinsky. See: Special Issue of magazine "Pribori i Technika Eksperimenta", No. 5, 1967, pp.9-70; N.V. Lazarev et al., "30 Years Operation of 25 MeV Proton Linac I-2 in ITEP at Beam Current of 200-230mA" (with reach references), LINAC-96, p. 542; C-96, p.160, AC-98, p.38. E-mail: *NikolayV.Lazarev@itep.ru*
I-30	Proton RFQ Linac - Injector on 30 MeV (constructed 1973/1983) since 1985 is (together with 1.5 GeV Fast Cycling Booster Synchrotron) the 2nd, after Linac I-100, injector of the U-70 Synchrotron at IHEP (Protvino). C-96, p.166. V.A. Teplyakov et al., "30 MeV RFQ Linac Parameters". EPAC-88, p.605; AC-98, p.32. E-mail: *zherebtsov@vx.olu.decnet.ihep.su*
I-100	Three cavities 148.5 MHz DTL Proton Linac (100 MeV, 100 mA, 100μs, 1 Hz) total length 80 m was put in operation since 1967. It about 2 years was the world's highest machine of that class and served up to 1983 as the 1st injector of the U-70 synchrotron at IHEP (Protvino). Peculiar features: it uses 700kV pulse (1ms) transformer preinjector and two-stage vacuum

	system. C-96, p.165; AC-98, p.31. Acceleration of C^{4+} ions: A.P. Maltsev, V.A. Teplyakov et al., 16th RUPAC, Protvino, Oct. 1998, Vol.2, p.212 and 17th RUPAC, Vol.2, p.302. E-mail: *zherebtsov@vxolu.decnet.ihep.su*
IASA RTM and e^- Linac	The IASA (Inst. Acc. Syst. and Application, Athens, Greece) is 240 MeV, 2380 MHz, 100μA RTM (Racetrack Microtron); M. Barbarason, EPAC-98, p.752; E. Stiliaris et al., "IASA 10 MeV CW Linac", EPAC'00, p.866.
ICR e^- Linac	100 MeV, 2.8 GHz, 0.1A, 1μs, 20 Hz e^- Linac was constructed (in 1995) at Kyoto U.; C-96, p.99. E-mail: *noda@kyticr.kuicr.kyoto-u.ac.jp*
ICR p Linac	7 MeV, 433 MHz 0.6mA Proton Linac use s.1992 for material irradiation at Kyoto U.; C-96, p.100. E-mail: *noda@kyticr.kuicr.kyoto-u.ac.jp*
IFMIF	International Fusion Material Irradiation test Facility, Project comprises complex of two 40 MeV, 125mA CW deuteron (D^+) 175 MHz Linacs, 3 lithium targets and irradiation chamber (V=0.5 l) with neutron flux of 9.10^{13} n/cm^{2}s or 2 MW/m^2. Cost of the Project design and realization in 10 years evaluates in 1996 as 910 M$ US. R.A. Jameson et al., "Particle Dynamics Design Aspects for an IFMIF D^+ RFQ", EPAC-96, p.1221; M. Martone, R.A. Jameson, V.A. Teplyakov at al. (Collaboration consists of authors from JAERI, LANL, Ass. Euroatom ENEA, Frascati, FZK Ass. Karlsruhe, Oak Ridge, IHEP), "IFMIF: A High Intensity Deuteron Beam Applications", EPAC-98, p.231; A. Sauer, R. Ferdinand, J.-M. Lagniel, R. Duperrier et al.: "Particle Dynamics for IFMIF", PAC-01, RPAH302 and EPAC'02, WEPLE081, THPLE059-060 and WEPLE099.
ILU-6, -6M, -8, -10, -10M	ILU-type 0.5 – 5.0 MeV, 8 – 25 mA$_{avg.}$, 20 – 50 kW e^- Linacs commercial available from BINP, V.L. Auslender et al., 17th RUPAC, Vol.2, p.347.
INDUS-1, INDUS-2	SR for VUV research INDUS-1 consists of 20MeV, 100 mA Microtron and 450 MeV Synchrotron with SR: G.K. Sahoo et al., CAT, Indore, India, "Commission Status of INDUS-1 SR Facility", APAC-98, p.274 and p.558; D.D. Bhawalkar et al., APAC-01, MOA04; INDUS-2: A.S. Raja Rao et al., APAC-98, p.p. 641, 668, 772; K. Ruwali et al., EPAC'02, TUPLE052-053.
INFN SC Linacs: 1) CW proton 2) pulse HI	1) INFN (Genova and Milano-LASA), jointly with ENEA, is working at the design study for a 30 MW, 350 MHz SC Linac driven waste transmutation subcritical system, TRASCO. C. Pagani, "Status of the INFN High Current SC Proton Linac for Waste Transmutation" LINAC-98, TH4108 and "A High Current 352 MHz SC Proton Linac", LINAC-96, p.107. 2) SC RFQ for heavy ions: G. Bisoffi et al., LINAC-02, TU472.
INS-ES Linac	15 MeV, 2.8 GHz, 1.2μs, 21.5 Hz, 150 mA e^- Linac is in operation since 1974 at INS Tokyo U. C-96, p.83. E-mail: *muto@ins.u-tokyo.ac.jp*
IPHI	Injector Proton High Intensity is R&D program (s.1997) of CEA-CRNS in France for the front end (10 MeV, 100mA CW) of high-power Linac. The first stage is SILHI - High-Intensity Light-Ion Source *see here*. P.-Y. Beauvais et al., "Status Report of IPHI", EPAC-00, THOAF202, p.283; P.E.Bernaudin et al., "Conceptual Design of the IPHI DTL", PAC-01,

	FPAH096; EPAC'02: P.-Y. Beauvais, "Status Report of IPHI", THPLE028, M. Painchault, "RFQ & DTL IPHI Project", THPLE029-031.
IPNS	IPNS (ANL, USA): 50 MeV H^- Linac and 450 MeV RCS: 15 μA, 30 Hz, 7 kW, in operation since 1981, beam yield in 1997 is 63mAxhr; I.S.K. Gardner, "A Review of SNS Accelerators", EPAC-98, p. 98.
IPNS Injector H^- Linac	50 MeV, 12mA$_{avg}$, 60-90μs, 30 Hz H^- or Proton Linac (was constructed 1959/1962) serves since 1983 as Injector of IPNS (Intense Pulsed Neutron Source) at ANL, USA. C-96, p.29. E-mail: *vstipp@anl.gov*
IREN	The Intense Resonant Neutron Source with 200 MeV 1.5 A driver e^- Linac with beam power 10 kW (plan) is being developed at JINR (Dubna). E. Laziev, "Linac LUE-200 Test Facilities" and "Research Program of IREN Test Facilities", LINAC-98, Reports MO4004 and MO4005; "IREN Project", A.K. Krasnykh, JINR, 1994 and 15th RUPAC, Vol.2, p.46.
ISAC I, ISAC II	Isotope Separator and Accelerator of Light Radioactive Ions at TRIUMF, 3 MeV/u, planned 1995/2000, (Canada). P. Schmor, "The High Intensity Radioactive Beam Facility at TRIUMF", EPAC-98, p.2386; R. Laxdal, "Status of the ISAC Accelerator for Radioactive Beams", LINAC-98, p.786; K. Fong, "Frequency Source [35 MHz] for the ISAC RFQ", and "First Beam Test with the ISAC RFQ", *ibid.*, Reports TH4009, -4066, -TU4087 (RFQ RF Tests); EPAC-2000, TUOAF203; R. Laxdal, "Completion and Operation of ISAC I and Extension to ISAC II", PAC-01, ROPA001 and FPAH111, -112 and EPAC'02, THPLE053; M. Pasini et al.: ISAC II will allow to accelerate ions with $3<A/q<7$ to 6.5 MeV/u for masses up to 150, EPAC'02, THPLE052; LINAC-02: A.K. Mitra et al., MO432; R. Laxdal, TU302. E-mail: *dutto@triumf.ca*
ISIR S- and L-Band Linacs	1) 150 MeV, 2.8 GHz, 0.65 A, 1.5μs, 60 Hz, 10m e^- Linac in operation s.1989 at Osaka U.; C-96, p.73. 2) 38 MeV, 1.3 GHz, 1 A, 20ns, 720 Hz, 10m length e^- Linac in operation since 1978 at Osaka U.; C-96, p.74. E-mail: *s-okuda@sanken.osaka-u.ac.jp*
ISIS and ISIS Injector	ISIS (RAL, UK): 70 MeV, 25mApeak, 97.8 MHz H^- Linac (C-96, p.183) and 800 MeV 200 μA, 50 Hz, 160 kW RCS - Rapid Cycling Synchrotron. In operation since 1985, beam yield in 1997 is 672mAxhr, I.S.K. Gardner, "A Review of SNS Accelerators", EPAC-98, p.98; and J. Carpenter, "Accelerators for SNS's", CC, Vol. 36, No.2, March 1996, p.4. ISIS now is the world's most powerful spallation neutron source, see: "Neutrons in the material world", A.Taylor (ISIS Director) et al., CC, Vol. 40 No.3, April 2000, p.20; D.J. Adams et al., "Possible MW Upgrades for ISIS", EPAC'00, p.975, EPAC'02, THP4A08; A. Letchford et al., ISIS RFQ and Test Stand: EPAC'02, THPLE045-048. E-mail: *cwp45@isise.pl.ac.uk*
ISOLDE	Isotope Separator On-Line at CERN. Using of it: CC, Vol.38, No.7, p.17.
ISTRA-36	Proton Linac on 36 MeV (to 1998 is working with 100mA beam 3 MeV RFQ section and the first 10 MeV DTL cavity of two ones) at ITEP (Moscow). I.V. Chuvilo et al., "Proton 36 MeV, 0.5mA Linac ISTRA-36

	as a Driver of Multipurpose Irradiation Test Facility", EPAC-96, p.2674; A.M. Kozodaev et al., "Program of Activities for the Linac-Driver of ITEP Subcritical Facility", PAC-97, 7P117; C-96, p.159; AC-98, p.37. E-mail: *kozodaev@vitep5.itep.ru*
IUCF	Indiana U. Cyclotron Facility; D.Frisel: EPAC-96, p.548, EPAC-98, p.496
JAERI/KEK Joint (JKJ) Project	According of CC Vol. 41 No.2, p.8, 2001: Phase 1 of the new JAERI/KEK Joint Project (described in CC Vol. 40 No.8, p.23, 2000) has effectively already been approved (~$860000). It will include: a 400 MeV NC Linac, a 3 GeV Rapid Cycling Proton Synchrotron operating at 1 MW, a 50 GeV PS operating at 0.75 MW, a major part of the 3 GeV neutron/meson facility, a portion of the 50 GeV experimental facility. After Phase 2 the facility will be considerably upgraded for neutrino Superkamiokande (L=300 km), experiment transmutation research, etc. The entire cost of full Project is ~$1.9 billion. Y. Yamazaki, (~ 400 MeV Linac + RCS) PAC-99, p.513 and EPAC-2000, THOAF201 and PAC-01, WOAA007. Phase 1 (from April 2001) will be completed in March 2007; EPAC'02: Y. Yamazaki, "The JAERI/KEK Joint Project", TUZGB003; C. Ohmori et al., "RF Acceleration System for the JKJ", TUPLE090; S. Arai et al., "Linac Complex in the JKJ RNB Facility", THPLE001; I. Sakai and M. Yamamoto et al., JKJ 3 GeV High Intensity PS, THPLE005; THPLE007; M. Tomizawa et al., JKJ 50 GeV High Intensity PS, THPLE009; Y. Arakaki et al., IH-Linac for unstable nuclei, THPLE006; LINAC-02: F. Naito, "The JKJ Project and its Performance", TH102.
JHF	Japan Hadron Facility at KEK is earlier (*see*: JKJ) Accelerator Project to build a complex consisting of a 200 MeV Proton Linac, a 3 GeV Booster Proton Ring and a 50 GeV, 2.10^{14} ppp ($10\mu A_{avg.}$) Main Proton Synchrotron Ring: "JHF Project Proposal", KEK Report 97-3, JHF-97-1.
JKJ Linac	PAC-01: Y. Yamazaki , WOAA007; LINAC-02: H. Ao et al., "R&D of ACS 190-400 MeV section of Linac for JKJ Project": MO420, -481; S. Michizono et al.: LLRF System, MO462 and Reference RF, MO463; A. Ueno et al.: Beam test in front-end system, TU423; F. Naito et al.: 3-50 MeV DTL, TU424, -447; S. Yamaguchi, S. Anami et al.: RF System, TU458-459; N. Ouchi et al., SC Cryomodule for 400-600 MeV 600 MHz Section, TU474; M. Ikegami, Y. Yamazaki et al., ACS Section: TH411, TH468.
JLab	*See here:* CEBAF or TJNAF.
JLC/NLC, JLCP	Japan Linear Collider (or Nippon Linear Collider) Project used X- band (14 GHz), C- band (6 GHz) and S-band (3 GHz) Linacs: *see here* "ATF"; M. Kihara, "The Japan Linear Collider Project", EPAC-98, MOZ03A; Y.H. Chin, "JLC R&D Status", PAC-01, WOPA010; LINAC-02: K. Takata, "NLC/JLC Collaboration" TU102, -103, TH414. C-96, pp.188-9.
JNC Linac	JNC high power 10 MeV, 4ms, 50 Hz, 20 $mA_{avg.}$ e^- Linac for applied use: K. Hirano et al., EPAC-00, THP1A01, p.815.

KEK e^+/e^- Injector Linac	There are now two 600 m separate e^+/e^- Linacs on energy 2.5 GeV, they had been used to fill both the Photon Factory (2.5 GeV storage ring) and the TRISTAN Accumulating Ring (2.5 GeV). They will be after upgrade united ones on 8 GeV Electron and 3.5 GeV Positron Linac that will serve as injector of KEKB rings. AC-98, p.49.
KEK H^- Linac	5.4 MeV, 432 MHz, 20mA, 600μs, 50 Hz H^- Test Stand Linac (s. 1997) with PMQ focusing; C-96, p.97. e-mail: *yoshishi@kekvax.kek.jp*
KEK Injector Proton Linac	40 MeV two cavities (15.5 and 12.9 m) 201 MHz, 10mA, 20 Hz repetition rate H^- Linac - Injector for 12 GeV KEK PS constructed 1971/1974. In the 2nd cavity used PMQ - permanent magnet quadrupoles. AC-98, p.50; C-96, p.96. e-mail: *eiichi@kekvax.kek.jp*
KEKB	Collider e^+/e^- on 8 GeV (electron) and 3.5 GeV (positron), D=960 m is constructed at KEK Lab since 1994 with goal to finish to December 1998. S. Kurokawa, "Present Status of KEKB Project", EPAC-98, p.123; K. Furukawa et al., PAC-99, p.993; Y.Funakoshi, "KEKB Performance", EPAC-2000, MOYE01, p.28 and PAC-01, RPPH131. In review of S. Kurokawa: "B-Factory Commissioning and First Results", PAC-01, MOAL002 and APAC-01, MOA01. E-96, p.448; AC-98, p.51; H. Koiso, " Status of the KEKB B-Factory", EPAC'02, MOPRI001.
KEKB Linac	8 GeV for e^- and 3.5 GeV for e^+ Linac is KEKB Injector. Y. Ogawa, "Commissioning of the KEKB Linac", Linac-98, WE2005 and PAC-99, p. 2984; CC, Vol. 39, No.7, 1999, p.5; T. Kamitani, "KEKB Injector Linac Status Report and Future Upgrade", EPAC'02, TUPLE077; New plan exchange beam energies of e^- and e^+ will allow to rise KEKB luminosity up to $10^{35}cm^2/s$: K. Furukawa, LINAC-02, TU431.
KEK-PF	KEK-PF slow-positron facility. T. Shidara, LINAC-98, MO4101; 2.5 GeV, 2.8 GHz, 1ns-1μs, 50 Hz Injector e^+/e^- Linac: C-96, p.93-94. e-mail: *hitoshik@kekvax.kek.jp*
KEK-PS and Booster	12 GeV Proton Synchrotron, $4.5\text{-}5.7.10^{12}$ppp or $1.8.10^{12}$ part/s, (1976) at KEK (Tsukuba). AC-98, p.47 (0.5 GeV Booster, p.48).
KMTA	Kharkov Material Test Accelerator is 22.5 MeV, 100mA, 152.5 MHz, 1000μs, 20 Hz Proton Linac (s. 1985) at Kharkov Phys. Tech. Inst.; C-96, p.180. e-mail: *kfti@rocket.kharkov.ua*
KOMAC and KTF (KOMAC Test Facility) ***see here***	At KAERI (Korea Atomic Energy Research Institute) from 1997 has been developed 20mA, 1 GeV proton/H^- pulse/CW Linac for Project KOMAC (Korea Multipurpose Accelerator Complex). In the 2nd stage 2003-2006 the machine will be completed and dedicated to experiments for a hybrid system. B.H. Choi, "Status of the KOMAC Project", ADTTA-99, p.200 and APAC-01; R&D of KOMAC RFQ: J.M. Han, LINAC-98 p.774 and PAC-99, p.3525; B.-H. Choi, "Status of the KOMAC Project", APAC-01, THAM01; J.-M. Han et al., "KTF RFQ Linac" - 350 MHz, 20 mA, 50 keV – 3 MeV RF characteristics are testing for operation conditions with pulsed and CW beam current, EPAC'02, THPLE056; LINAC-02: Y.S.

	Cho et al., "Status & Plan of 100 MeV Linac", TU425; H.S. Kim et al.: High Power RF, TU464; H.J. Kwon et al., "RFQ RF System", TH454.
KSR	Kyoto Storage Ring on 300 MeV. H. Dewa, Kyoto U., "Electron Storage and Stretcher Ring KSR", EPAC-96, p.451; T. Shirai, PAC-99, p.3110; A. Noda et al., EPAC'02, TUPLE079, WEPDO025.
KSRS	I. Krylov et al., RRC, "Kurchatov SRS: Status, Problems, Perspectives", it consists of 80 MeV Linac, 450 MeV Booster and 2.5 GeV Main Ring and is in operation since May, 2000: EPAC'02, TUPRI018.
KSU Linac	Kansas U. HI SC Booster (after Tandem) Linac: 3 MeV/u (for Cu) and 5 MeV/u (for F)) (s. 1989); C-96, p.34. e-mail: *tgray@phys.ksu.edu*
KTF	KOMAC (Korea Multipurpose Accelerator Complex) Test Facility: Y.-S. Cho et al., "Design of 20 MeV, d.f.=10% DTL", PAC-01, FPAH105; J.-M. Han et al., "KTF RFQ Linac" – 350 MHz, 20 mA, 50 keV – 3 MeV RF characteristics are testing for operation conditions with pulsed and CW beam current, EPAC'02, THPLE056, KTF RF System: TUPLE103; LINAC-02: Y.S. Cho et al., "Status & Plan of 100 MeV Linac", TU425; J.M. Han et al., "3 MeV RFQ Linac for KTF", TH412.
KURRI NG proposal and KURRI e^- Linac	Kyoto University Research Reactor Institute has been proposed a hybrid system of an 20 MeV deuteron Linac and an existing small critical nuclear fuel assembly as a future neutron source – test stand for the final goal which is composed of a 300-500 MeV proton Linac and 5 MW subcritical assembly. Y. Kawase and M. Inoue, Linac-98, p.300; Until now (since 1967) at KURRI operate 30-46 MeV, 1.3 GHz, 10ns-4μs, up to 480 Hz e^- Linac; 10-17 kW, 2-3e13 n/s G. Kim, PAC-99, p.2595. Or, by the last plan: RFQ and two Cyclotrons on 70 and 500 MeV, 1 mA, S. Shiroya et al., APAC-01, TUAM06. C-96, p.81. e-mail: *takami@rri.kyoto-u.ac.jp*
LAE-8, LAE-4	1) 8 MeV, 1.9 GHz, 4μs, 150-250 Hz irradiation Linac operating s. 1986 at YerPhI; C-96, p.110. 2) 4 MeV, 1.9 GHz, 4μs, 150-250 Hz irradiation Linac (s. 1984) at YerPhI; C-96, p.112. e-mail: *yeritsian@vxc.yerphi.am*
LAMPF	Constructed 1968/1972 Los Alamos Meson Physics Facility: 800 MeV, 17mA pulse, 1.0mAavg. beam current is the most world's powerful (800kW) Proton and H^- Linac. M.S. Livingston, "LAMPF A Nuclear Research Facility", LA-6878-MS, 1977. O. Van Dyck, "LAMPF Reliability", ADTT-1994 Conf., p.575. Now it is the most significant part of an LANSCE (MLNSCE) Complex *see here*. LINAC-98, TH4031.
LANSCE (MLNSCE)	LANSCE (Los Alamos Neutron Science Center, USA) - its new name is MLNSCE, *see here*. It uses Linac LAMPF, which provides a 800 MeV 17mA, proton 825μs 120Hz pulse beam (1mAavg.) and injects H pulses (100 of 120 Hz) to WNR – Weapon Neutron Research and rest 20 Hz H^- pulses - to the SPSS – Short Pulse Spallation Source (upgraded PSR – Proton Storage Ring); LINAC-98: J. Lyles, MO4074; R.W. Garnet, TU4021, TU4053 and TU4054 (M. Williams et al., Development of 40mA, 1 ms, 120 Hz, 12% d.f., H^- Ion Source), TU4094 (100 kV power

	supply of ISTS), TH4053. C-96, p.47. J. Lyles et al., "A New 201.25 MHz High Power RF System for the LANSCE DTL", EPAC'02, TUPLE061; LINAC-02: P.W. Lisowski and K.W. Jones, "Status and Plans for the future of LANSCE", TU433; A.N. Drugakov et al., "Isotope Production Facility", TH472. e-mail: *earl@lanl.gov*
LASREF	Historically the Los Alamos Spallation Radiation Effect Facility (LANL, USA) has used manual control to position of the 800 MW, 800 MeV proton beam on targets. New experiments require more stringent position control more frequently than can be done manually for long periods of time. Results and details of system are presented. C. Pillai et al., PAC-97, Report 5P44.
LCLS Linac	Linac Coherent Light Source at SLAC (USA) which will produce of high peak power coherent X-rays. The design utilizes 14.3 GeV electrons from the last km of the SLAC Linac to create the world's 1st "hard" X-ray laser. C-96, p.18; P. Emma, LINAC-98, TU2002 and PAC-01 TOPA008; X.J. Wang et al., *ibid.*, WPAH061; C. Limborg et al., "New Optimization for the LCLS Photo-injector", EPAC'02, TUPRI041; J. Galayda, "LCLS Project" LINAC-02, MO201. e-mail: *vinod@slac.stanford.edu*
LEAR, LEIR	Low Energy Antiproton Ring (CERN) on 0.005–1.2 GeV (antiproton, p and H^-) constructed 1981/1982. It has ring D=25 m and allows p-p~ colliding beams and slow (10 min - 4 h) ejection. At the end of 1996 experimental program was prematurely terminated to concentrate more resources for LHC Project (as in1984 was done with ISR for LEP); CC, Vol.38, No.6, p.31. LEAR will now be converted into the LEIR - ion ring fore injection of ions Pb into LHC.
LEDA	The Low Energy Demonstration Accelerator (LEDA) on 10 MeV, 100mA CW proton beam being constructed at LANL (USA) will serve as the prototype for the low energy section of the APT Project. D. Rees, J. Bradley et al., EPAC-98, p.1912. H.V. Smith, "Status Update of the LEDA", LINAC-98 Reports: MO4059 (Diagnostics). -4087 (CCDTL). -4088 (RFQ tuning). -4091 (CCDTL choice and test),.-4108 (CCDTL heat transfer). TU4014 (LEDA Status Update). -4044 (HEBT Beam Line). -4052 (LEBT Mechanical Design). -4060 (APT and LEDA Beam Position). -4061 (Phase and Energy Measurements). -4071 (Modulator Design),.-4072 (D. Rees, "Design, Operation and Test Results of 350 MHz LEDA RF System"). -4082 (1.25MeV CW RFQ Beam Study). -4083 (Mechanical Design and Fabrication). -4090 (LEDA and APT Beamstops). -4091 (Thermal and Hydraulic Analysis of Beamstops). -4092 (CRITS and LEDA Beamstops). -4095 (Testing of Vacuum Cryopumps and ST185 sintered NEG Cartriges – used in RF windows). WE1003 (CW RFQ Fabrication & Engineering), TH4045 (Tuning Proton Source), -4054 (Test of Proton Injector with 1.25 MeV CW RFQ) -4055 (Operation of Proton Source in Pulse Mode). -4062 (Beam Profile Measurements by Residual Gas Fluorescence). -4073 (1 MW, CW 350 MHz Coaxial Vacuum Windows Tests). -4075 (Low Level RF Control System). -4076 (350 and

	700 MHz RF Power Distribution System). -4099 (Resonance Control Cooling System for the APT/LEDA RFQ). FR 1001 (APT and LEDA High Power RF System), PAC-01: H.V. Smith, Jr., J.D. Schneider et al., "Low-Energy Demonstration Accelerator (LEDA) Test Results and Plans", RPPH031, and LEDA RFQ: L. Young, WOAA004 and FPAH107.
LEIR	M. Chanel, "Low Energy Ion Ring at CERN": conversion of the old LEAR into the LEIR allows to accumulate $9x10^8$ Lead ions, EPAC'02, THPLE074.
LELIA	Laser a Electrons Libres on Induction Accelerator: 3 MeV, 1kA, 80ns, 0.1 Hz is in operation s. 1992 at CEA/CESTA (France); C-96, p.116.
LEP, LEP1, LEP2	Large Electron Positron Collider, (CERN), 93.5 GeV (1997), D=8486 m, 27 km ring, luminosity up to $5.6x10^{31}$; Construction s. 1983, first beam collisions – 1989. AC-98, p.7; G. Arduini, "LEP1 Operation 1989 – 1995", EPAC-96, p.286. K.Hubner, "LEP2: Present and Future Performance and Limitations", EPAC-98, p.38; S. Mayers,"LEP2: Present and Future Performance and Limitations", PAC-97, Report 1BC2; CC, Vol.39, No.8, p.14. S.Myers, "Twelve Years of Beam in LEP: the Good, Bed, and the Unforeseen", EPAC-2000, Report MOZE02; R. Assmann et al., "A Brief History of the LEP Collider", CERN-SL-2002-009 (OP).
LEPTA	Project of Low Energy Particle Toroidal Accumulator – small positron SR with electron cooling have proposed at JINR; A.V. Ivanov et al., 17th RUPAC, Vol. 1, p.87; G. Trubnikov et al., EPAC'02, TUPDO017.
LHC	Large Hadron Collider (CERN), proton-proton 2x7000 GeV, D=8486 m, L= 27 km and 5 km tunnel to transfer particles from existing SPS Ring; Construction: 1995/2005, besides of European members of CERN community, USA paid $531 million. LHC Project Design – in CERN/AC 95-05 October 1995; L.R. Evans, "LHC Status and Plans", PAC-97, Report 2B4; L.R. Evans, "LHC Accelerator Physics and Technology Challenges", EPAC-98, p.3; AC-98, p.14. R. Ostojic, "Status and Challenges of the LHC Construction", PAC-01, MOPA002, and -007; P. Faugeras, "Status and Prospect of the LHC Project", APAC-01, MOD05; R. Jones, "LHC Beam Instrumentation", 17th RUPAC, Vol.1, p.175; R. Schmidt, "Status of the LHC ", EPAC'02, MOXGB003; G. Arduini et al., "Status of the LHC Beam in the CERN SPS", EPAC'02, THAGB002.
LIAXF, LIAXFU	Linear Induction Accelerator (10 MeV, 2 kA, 90ns, e^-) X-ray Facility (LIAXFU – Upgraded in 1996). Description experimental results and LIAXFU schemes are presented J. Deng, Linac-98, TU4001.
LIBO	A feasibility study of 3 GHz side-coupled Booster Linac is proposed to upgrade the beam energy of existing in several hospitals Proton Cyclotrons from 60-70 MeV to 200 MeV, required to treat deeply seated cancerous tumors. U. Amaldi et al., LINAC-98, Reports TU4098, TU4097; PAC-01, FOAA003; C. De Martinis et al., "Beam Tests on a Proton Linac Booster for Hadrontherapy", EPAC'02, MOPRI095.

LIC	20 MeV, 1300mA, 2.8 GHz, 2.5μs, 6.25 Hz e^- Linac at Kharkov Phys. Tech. Inst. (1993); C-96, p.179. e-mail: *kushnir@nik.kharkov.ua*
LIL	LEP e^+/e^- 0.5 GeV Injector Linacs was operated at CERN since 1986, C-96, pp.170-171. e-mail: *potier@cernvm.cern.ch*
Linac 2	50 MeV, 202 MHz, 20-150μs, 1-2 Hz Proton Injector for CERN Acc. Complex since 1978; C-96, p.173; and *see here* CERN Linac 2.
Linac 3, DESY	50 MeV, 202 MHz, 30μs, 0.25-1 Hz Proton Injector for DESY Acc. Complex since 1988; C-96, p.142. e-mail: *rep@hering.mpi-hd.mpg.de*
Linac 3,CERN	4.2 MeV/u, 101/202 MHz, 2μs, 1-10 Hz Heavy Ion (Pb^{55+}) Injector for CERN Acc. Complex since 1994; C-96, p.175; *see here* CERN Linac 3.
Linac-60	60 MeV, 1 A, 1.8 GHz, 5.5μs, 150 Hz e^- Linac (FAKEL) is operated with breeding assembly as NG at Kurchatov Inst. since 1973; C-96, p.162. e-mail: *kalach@facel.ssspi.msk.ru*
LINAG	A new structure combining low dimensions of the four-rods and technical advantages of the four-vanes have proposed by M. Painchault and R. Duperrier at CEA, Gif-sur-Yvette: EPAC'02, TUPDO001.
Linear Colliders:	Table with all parameters of Linear Colliders (*see here*: TESLA, SBLC, JLC(C), JLC(X), NLC, VLEPP, CLIC): there are in C-96, pp.188-189; M. Tigner, "Review of Linear Collider Designs and Path to the Future", EPAC'02, MOZGB001; C. Adolphsen, "Review of SC vs. NC Accelerating Systems for Linear Colliders", *ibid.*, MOZGB003.
LISA	8ps, 5 A (or 40pC), 50 MHz rep. rate during of 1ms, 10 Hz $2mA_{avg.}$ Injector-Linac at INFN-LNF, Italy; M. Castellano, EPAC-96, p.765.
LLNL e^+/e^-	2.86 GHz, 17m e^- Linac (s. 1969) with beam: 100 MeV, 300 Hz, 3μs, 0.8 A, or 1440 Hz, 20ns, 10 A; C-96, p.10. e-mail: *tcowan@llnl.gov*
LNLS	LNLS is 1.37 GeV electron SR for light source at Campinas (Brazil); P.F. Tavares, "The LNLS 500 MeV Booster Synchrotron" will be new injector, EPAC-2000, WEP2B18; PAC-01, WPPH100-101; PAC-01, WPPH101; EPAC'02, TUPLE038-039.
LPIS	Lebedev Phys. I. 1.3 GeV Synchrotron: V. Kurakin, PAC-01, WPPH303.
LU-20, (ЛУ-20)	LU-20, (ЛУ-20: 145 MHz, 14.4m length) is operational s. 1973 at JINR, now as 5 MeV/u, 5-100μs Nuclotron Injector of ions from p^+ and deuteron up to $_{84}Kr^{34+}$, V.A. Andreev, 15th RUPAC, Vol. 1, p.102; C-96, p.156. e-mail: *edik@sunhe.jinr.dubna.su*
LU-20, (ЛУ-20)	LU-20, (ЛУ-20): 27 MeV, 1 $mA_{avg.}$, e^- Linac is operational at NSC KIPT for radio-isotopes production, A.N. Dovbnya, 17th RUPAC, Vol. 2, p.400.
LU-50 (and LU-10-20)	75 MeV, 2.4mA, 1.8 GHz, 0.01μs, 2.4kHz e^- Linac in operation since 1981 at VNIIEF, Arzamas-16; C-96, p.167. LU-10-20 see C-96, p.168. e-mail: *zavyalov@expd.rfnc.nnov.su*

LUE-200	"Linac LUE Test Facilities", E. Laziev, LINAC-98; A.P. Soumbaev et al., 113 MeV, 1.5 A, 240ns beam pulse were achieved: LINAC-02, TU405. *see too here* "IREN".
LUE-2000	2 GeV, 1mA, 2.8 GHz, 2.5μs, 100 Hz e^- Linac (s. 1964) at Kharkov Phys. Tech. Inst.; C-96, p.176. e-mail: *tur@nik.kharkov.ua*
LUE-40	40 MeV, 1000mA, 2.8 GHz, 10μs, 100 Hz e^- Linac (s. 1964) at Kharkov Phys. Tech. Inst.; C-96, p.178. e-mail: *tur@nik.kharkov.ua*
LUE-60	60 MeV, 100mA, 2.8 GHz, 1.2μs, 25 Hz e^- Linac (s. 1990) at Kharkov Phys. Tech. Inst.; C-96, p.177. e-mail: *tur@nik.kharkov.ua*
LUER-20M (ЛУЭР-20М)	Medical 20 MeV e^- Linac with max. energy of gamma-quantum 18 MeV and max. radiation dose 5 Gr/min. M.F. Vorogushin et al., 17th RUPAC, Vol.2, p.295; V.P. Malyshev et al., *ibid.*, p.323
MACSE	25 MeV, 1.5 GHz, 0.1mA, CW SC e^- Linac (s. 1991) at CEA/Saclay; LINAC-90, p.141; C-96, p.128. e-mail: *jablonka@hep.saclay.cea.fr*
MAFF Linac	Munich Accelerator for Fission Fragments at the new high flux reactor FRM-II at Garching will deliver intense beams of neutron rich fission fragments (up to 10^{12} pps) in order to produce new very heavy long living elements. 3.7 – 5.9 MeV/u Linac is restricted 20 m, so it uses of IH-structure. O. Kester et al., LINAC-98, p.112 and EPAC'00, p.827; H. Bongers et al., PAC-01, FPAH113 and EPAC'02, THPLE068.
MAMI (ILAC)	Injector to the CW-RTM-Cascade MAMI (Mainz 3 Microtrons at IfK). It is 3.5 MeV, 2.45 MHz e Linac (since 1988); C-96, p.145; A. Jankowiak et all., "Design and Status of the 1.5 GeV HDSM for MAMI", EPAC'02, TUPLE022. e-mail: *eut@vkpmza.kph.uni-mainz.de*
MARK III (DFELL)	Duke FEL Laboratory facility at Duke Univ. provides UHV from 1 GeV, 1 A SR, G. Swift et al., "Status of MARK III FEL", PAC-01, WPPH036, WPPH110, WPPH325.
MAX-lab Linac	500 MeV (with 1-fold beam recirculation) e^- Linac for injection into SR MAX-I, then MAX-II, then MAX-III at Lund, Sweden: B. Anderberg et al., EPAC-00, MOP1B06, p.1687; G. LeBlanc et al., PAC-01, WPPH015.
MEA	Medium Energy Electron Accelerator is 800 MeV, 40mA, 2.86 GHz, 2-3.5μs, 250 Hz e^- Injector for AmPS; in operation since 1978 at NITHEF, Amsterdam; C-96, p.152. . e-mail: *frans@nikhefk.nikhef.nl*
MESON Factories	LAMPF (LANSCE), TRIUMF, PSI (SINQ), MMF (INR) *see here*,
MGC-20, -30 (МГЦ-20, -30)	Commercial available from Efremov Institute St. Petersburg up to 20 MeV (p, d, α, ^{3}He) Cyclotron for production of different radio-isotopes (^{123}I, ^{67}Ga, ^{111}In et al.), L.M. Solin et al., 17th RUPAC, Vol.2, p.326 and p.370.
MILAC	Multi Charged Ion (usually operated with Ar^{12+}) Linac 8.5 MeV/u, 2μAe, 47.2 MHz, 500μs, 5 Hz Linac at Kharkov Phys. Tech. Inst.; C-96, p.181. e-mail: *kfti@rocket.kharkov.ua*

MIRF	Medical Industrial Radiation Facility at NIST (constructed 1973/1974 for New Haven Hospital at Gaithersburg, USA) uses 32 MeV, 7μs, 100 Hz, 3 GHz, 10μA e Linac; C-96, p.37. e-mail: *cedick@enh.nist.gov*
MIT-Bates Linac	Massachussets Institute of Technology – Bates Linear Accelerator Center (constructed 1967/1971) 1 GeV, (150m), 40mA, 16μs, 1kHz, $100kW_{avg.}$, 2.8 GHz e^- Research Linac; C-96, p.38; T.W.Donnelly, "MIT-Bates celebrates 25 years", CC, Vol. 40 No.5, June 2000, p.33. e-mail: *sk@mitlns.mit.edu*
MLNSCE	Manuel Lujan Neutron Scattering Center (at LANL): a new name of LANSCE (*see here*), 800 MeV Linac (beam line from LAMPF, *see here*) and SR: 70 μA, 20 Hz, 56 kW, (in operation since 1985, upgraded now to 200μA, and 30 Hz, yield in 1997 is 144mAxhr).
MLUD-3	1.65 MeV, 65mAe, 97.8 MHz, 250μs, 10 Hz D' Linac (1975) at Kharkov Phys. Tech. Inst.; C-96, p.182. e-mail: *kfti@rocket.kharkov.ua*
MMF, MMFL	600 MeV, 500μA (by Project) Proton Linac. S.K. Esin, "Moscow Meson Factory Linac", its new injection system will increase the average beam current from resent 70 μA to ~200 μA; during the March 1998 run MMFL at the 1st time worked for the Pulse Neutron Source, LINAC-98, TU4020. Its description: V.D. Burlakov, LINAC-84, p.9; and C-96, p.158; L.V. Kravchuk, "Upgrade of INR Proton Linac for Production of 3MW Beam", PAC-99, p.3282; S.K. Esin, L.V. Kravchuk, et al., 17th RUPAC, Vol.2, p.219 and Vol.1, p.323; A. Kvasha, "MMF DTL RF System Upgrade" EPAC'02, TUPLE108. e-mail: *kravchuk@al20.inr.troitsk.ru*
Muon μ+ μ- Collider & SR	Proposal of Muon "2x2 TeV μ+ μ- Collider" by A.N. Skrinsky and D. Neuffer (*see*: N.V. Mokhov and R.J. Noble, 15th RUPAC, Vol.2, p.75); R.J. Noble, "Muon Collider Progress", EPAC-98, p.108; P. Lebrun, "The Fermilab Feasibility Study of a Neutrino Source Based on a Muon SR", 17th RUPAC, V.1, p.22; PAC-01: R. Palmer et al., "A 2nd Feasibility Study of a Muon SR NF", FOAC007; C. Johnstone et al., "A 50-GeV Muon SR for a NF at FNAL", RPPH059-061 and L. Harwood, RPPH067. *http://www.fnal.gov/projects/muon.collider/nu/study/study.html*
MUSES	A new type of experimental facility, the Multi-Use Experimental Storage Ring is being proposed for the RIKEN RI beam factory in Japan. It will be consist of 4 rings: Double-Storage Rings (DSR), an accumulator cooler ring (ACR), and a booster-synchrotron ring (BSR), where ions with A/q=2 are accelerated to 1400A MeV. In addition, electrons from 300 MeV e^- Linac are accelerated up to 2500 MeV by the BSR. I. Tanibata, NPN Int., Vol. 8, No.4, 1998, pp.4-8; in 2005 will be commissioned a new complex of three ring cyclotrons with K=510 MeV, 980 MeV and 2500 MeV: Y. Yano, "RIKEN RI Beam Factory Project: Progress Report", PAC-01, ROPA007.
NANOHANA	Project of 0.5-2.0 GeV 300 mA SRS: V. Korchuganov, NI&M, Vol.A448, 2000, p.27; A.A. Buschuev et al., 17th RUPAC, Vol.1, p.122;

NEPAL	100 MeV, 3 GHz, 40 A, 0.2-3μs, 25 Hz Experimental 80 MeV/m e^- Linac at LAL, Orsay, (s. 1980); C-96, p.126. e-mail: *bienvenu@lalcls.in2p3.fr*
Neutrino Factories Projects and Proposals	1) P. Lebrun, "The Fermilab Feasibility Study of a Neutrino Source Based on a Muon Storage Ring", 17th RUPAC, Vol.1, p.22. 2) N. Holtkamp et al., "Intense Muon Sources for Neutrino Factories and Muon Colliders", EPAC-2000, p.103. 3) H. Haseroth, "Status of Studies for a Neutrino Factory at CERN ", EPAC-2000, p.253. 4) C.R. Prior et al., "Synchrotron-Based Proton Drivers for a Neutrino Factory " EPAC-2000, p.963. 5) H. Schonauer et al., "A Slow-Cycling Proton Driver for a Neutrino Factory " EPAC-2000, p.966. 6) R. Cappi et al., "Design of 2.2 GeV Accumulator and Compressor for a Neutrino Factory " EPAC-2000, p.921. 7) M.S. Zisman, "Status of Neutrino Factory and Muon Collider R&D", PAC-2001, WOAB008. 8) N. Holtkamp and D. Finley, eds., " A Feasibility Study of a Neutrino Source Based on a Muon Storage Ring ", Fermilab-Pub-00/108-E http://www.fnal.gov/projects/muon_collider/nu/study/report/machine_report/, *use too:* http://www.cap.bnl.gov/mumu/studyii/. 9) A. Blondel and G. Fraser, "Making muon rings round neutrino factories", CC Vol.40, No.3 April 2000, p.17. 10) R. Palmer et al., "A Second Feasibility Study of a Muon SR Neutrino Factory", PAC-01, FOAC007. 11) W. Fawley et al., "Studies of Front End of a Neutrino Factory", PAC-01, FOAC011. 12) K. Hubner, "Accelerator-Based Neutrino Beams", EPAC'02, THZGB002. 13) Y. Mori, " Neutrino Factory in Japan: Based on FFAG Accelerators", EPAC'02, THALA003. 14) A. De Rujula, "Trails of Future High-Energy Neutrino Physics", EPAC'02, FRYGB003. 15) W.T. Weng et al., "Design and Plan of the AGS Neutrino Facility", LINAC-02, TH418. 16) H. Haseroth, "Neutrino Factory/Cooling Experiment", LINAC-02, FR102.
New SUBARU	The synchrotron radiation facility with 1.5 GeV e^- SR was completed in Spring-8 site to produce VUV and soft X-ray synchrotron radiation; S. Hashimoto et al., "Present Status of the New SUBARU" PAC-01, WPPH097; T. Asaka et al., EPAC'02, TUPRI118.
NFPD: CERN, RAL, FNAL, JJP	Proposals of Neutrino Factory Proton Drivers: CERN NFPD (with LAR): 2.2 GeV, 1.8 mA, 75 Hz, 4 MW, R. Cappi et al., EPAC-00, p.921; RAL NFPD (with two RCS): 5 GeV, 0.4 mA, 25 Hz, 4 MW (or 15 GeV, 12.5 Hz, 4 MW), C.R. Prior et al., EPAC-00, p.963; FNAL NFPD (with two RCS): 16 GeV, 0.125 mA, 15 Hz, 2 MW; JJP NFPD (with RCS): 2.2

	GeV, 1.8 mA, 75 Hz, 4 MW; J.Wei, EPAC-00, p.123.
NIJI-III	It is 120 MeV; 2.8 GHz, 1-10μs, 25 Hz e^- Linac SR Injector (s. 1993) at Sumimoto Electric; C-96, p.78. e-mail: *emura@okk.sumiden.co.jp*
NLC, NLCTA	Next 500 GeV (c.m.) Linear Collider is SLAC's Project, it based on two 11.4 GHz, 35-65 MV/m RT Linacs; there is also 0.5 GeV NLC Test Accelerator (1992/1996) that will serve as a test bed. R.D. Ruth, PAC-97, Report 5B4; PAC-01: C. Adolphsen et al., "Processsing Studies of X-Band Accelerator Structure at the NLCTA", ROAA003, J. Sheppard et al., FPAH068-73, -75. C-96, p.19, p.188. e-mail: *rruth@slac.stanford.edu*
NSCL Cyclotrons	P. Miller, F. Marti et al., "Commissioning of the Coupled Cyclotron System (K500 & K1200) at Nat. SC Cyclotron Lab.", PAC-01, WPPH049
NSLS Linac	National Synchrotron Light Source 120 MeV, 2.8 GHz, 2.5μs, 2 Hz e^- Injector Linac (1980); J. Wu, L. Yu, "HGHG DUV FEL at the NSLS", WPPH108 and -329, PAC-01; C-96, p.54. e-mail: *blum@bnllsi.bnl.gov*
NSNS	National Spallation Neutron Source, the same as SNS – *see here*.
NSP Linac	Former Neutron Science Project (JAERI, Japan) based on 1.5 GeV, 600 MHz 1mAavg., 1.5 MW pulse Linac (much more later: 5.3mAavg., 8 MW, CW beam); cavities up to 100 MeV – RT, up to 1.5 GeV – SC. M. Mizumoto, LINAC-98, Reports: TU1004 and, for its RF System, - TH4068; M. Mizumoto, "High Intensity Proton Accelerator for Neutron Science Project at JAERI", EPAC-98, p.746 and *ibid.*, p.719 (beam dynamics), p. 734 (SC cavities), p. 749 (RFQ). Combine JAERI/KEK Project (*see here*): Y. Yamazaki, (about 400 MeV Linac + RCS) PAC-99, p.513 and EPAC-2000, Report THOAF201; M. Mizumoto, ADTTA-99, p.724 and K. Hasegava "Development of NSP Linac", PAC-99, p.3546. e-mail: *hasegava@linac.tokai.jaeri.go.jp*
NSRL	NSRL at Hefei is SRLS with 200 mA 800 MeV, it has been operating for 12 years; now have proposed improvement by NSRL Project-II, P. Lu, Y. Wang et al., EPAC'02, WEPDO019, TSHPRI050.
Nuclotron	Proton Synchrotron on 6 GeV/n (D=40 m) for ions p, d, d↑, α, $_{12}C$, $_{84}Kr$, max beam int. 5.10^{11}. Constructed at JINR (Dubna) in 1993. AC-98, p.27. I. Issinsky, D. Dinev et al., slow beam extraction: PAC-01 TPAH313; possibilities to increase energy of Nuclotron: EPAC'02, THPLE092-094.
ORELA	178 MeV, 15 A 2-50ns e^- Linac for Production of Neutrons and Slow Positrons at Oak Ridge (since 1969); C-96, p.59. e-mail: *levista@ornl.gov*
Orsay Linacs	Three Orsay 1-2.3 GeV, 3 GHz, 3-100 A, 20ns-1.5μs, 50 Hz e^-/e^+ Linacs are in operation (s. 1968) at LURE for e^- experiments, for e^+ production and as e^+ Injector of 800 MeV Super-ACO and 1.1 GeV DCI Storage Rings; E-94, p.170; C-96, pp.119-121. e-mail: *tordeux@lalcls.in2p3.fr*
PAL Test Linac	Current status of 85 MeV, 100mA, 4μs, 10 Hz S-band e^- Test Linac at Pohang Acc. Lab.: H.S. Kang, LINAC-02, MO410.

PEP	Positron–Electron Project, Collider on 13.7-16 GeV, 20mA/beam was constructed at SLAC (in 1980). J.R. Rees, "The PEP Storage Ring: Current Status", PAC-1981, Washington DC; C-89, p.69.
PEP-II, (PEP2), PEP-N	PEP-II is an asymmetric 9 GeV two-ring B-Factory Facility (e^-/e^+ collider) with luminosity of ~10^{34}/sq.cm.s, constructed at SLAC since January 1994 with finish planned on July 1998. PAC-97, Reports: 6P52, -54,-55,-56. J. Dorfman, "PEP-II Status Report", Proc. EPAC-98, p.33. AC-98, 1998, p.55. (23 July the first e^-/e^+ collisions were really observed, CC, Vol.38, No.6, September 1998, p.17). J.T. Seeman, "PEP-II Performance", EPAC-2000, MOXE03, p.38; Review by S. Kurokawa, "B-Factory Commissioning and First Results", PAC-01, MOAL002; RPPH140; PEP-N: RPPH138, RPPH139; J. Seeman, "Status and Future for the PEP-II B-Factory", PAC-01, RPPH137; EPAC'02, MOPRI013.
PERL	Project of Photoinjected Energy Recovery 3ps L-band 25 MeV, CW Linac proposed at BNL by X. Wang et al., EPAC'02, TUPRI068.
PETRA 2	Until the end of 1986 PETRA used as 12, 12, 40 GeV e^+, e^- and p Collider at DESY. From 1987 to 1989 PETRA is being modified and from 1990 it used as e^-/e^+ and p injector for the HERA main ring and intense SR Source; W. Bialowons, EPAC-96, p.3.
PHERMEX	Pulsed High Energy Machine Emitting X-Rays 30 MeV, 50 MHz, 0.2μs, 1 Hz, 1000 A e^- Linac in operation at LANL since 1963; C-96, p.41. e-mail: *scottw@lanl.gov*
PIAVE	PIAVE - Positive Ion Accelerator for Very-low Energy as injector for heavy ion Linac ALPI at INFN, LINAC-98, TH4085.
PIMMS	Proton-Ion Medical Machine Study – application of accelerated proton beams at CERN facilities for production such ultra-short radio-nuclides as ^{201}Tl ($\tau/2$=73h), ^{111}In ($\tau/2$=67.2h), ^{67}Ga ($\tau/2$=78.3h) and ^{123}I ($\tau/2$=13.2h). *See e.g.* CC, Vol.38, No.7, p.20.
PIVAIR	Prototype of Induction 8 MeV, 3.5kA, 80ns, single shot Linac for AIRIX (*see here*) is operating (s. 1994) in CEA/CESTA (France); C-96, p.115.
PL-2 RFQ	Proton or deuteron 1.75 MeV RFQ constructed (1994) LANL for a small ORNL n-source; C-96, p.48. e-mail: *ccappiello@lanl.gov*
PL-7 Linac	An AccSys Technology Model PL-7 H^- Linac (3 MeV RFQ and 4 MeV DTL with 1mA beam current) use to pre-accelerate H^- ions to 7 MeV for strip injection into a new 2.3 Tm injector synchrotron now being commissioned at IUCF. R.W. Hamm, (AccSys Technology) et al., "Performance of an AccSys Technology PL-7 Linac as an Injector for the IUCF Cooler Injector Cyclotron", LINAC-98, MO4009. R.W. Hamm, "Beam Injection Study of the TOP Linac using AccSys Model PL-7 Linac", EPAC-2000, Report MOP1B13. e-mail: *rhamm@linacs.com*
PLEIADES	LLNL Project of Picosecond Laser Electron Interaction for Dynamic Evaluation of Structures is a novel ultra fast hard X-ray (10-200keV)

	source greatly exceed of SRS 3rd generation in speed, peak brightness and simplicity (100-fold smaller): P.T. Springer et al., LINAC-02, TH416.
PLS Linac and SR at POSTECH	The 2-2.5 GeV e^- Linac at the Pohang Accelerator Laboratory has been operated continuously as injector for the Pohang Light Source (PLS) since 1994. M.H. Cho, W. Namkung et al., LINAC-98, TU4024; S.H. Nam, PAC-99, p.3504. T.-Y. Lee, "Present Status of the PLS", PAC-01, WPPH084; J.-Y. Huang et al., "Operational Status of the PLS", EPAC'02, TUPRI014 - 16; LINAC-02: S.H. Nam et al., "Status of the PLS 2.5 GeV Electron Linac", TH407; K.R. Kim et al., "Reliability of PLS Mechanical System", TH475. C-96, p.102. E-mail: *namkung@vision.postech.ac.kr*
PNC Linac	10 MeV, 100mA, 1.25 GHz, 10μs-4ms, 50 Hz, 18m e^- Linac in operation (s. 1996) at PNC, Japan; C-96, p.80. e-mail: *lemoto@oec.pnc.go.jp*
PNF	Pohang Neutron Facility is pulsed NG based on 100 MeV, 1.5μs, 30mA, 12 Hz, e^- Linac in Korea; conversion ration from e^- beam to n is 0.032; G. Kim, et al., PAC-01, WPPH043; G.N. Kim et al., LINAC-02, TU432. e-mail: *gnkim@kmu.ac.kr*
Post-Accelerators (PA)	Post-Accelerators, *see here*: Booster Linacs. P. Ostroumov et al., PA for RIA (RIB Linac for ions up to uranium), PAC-01, FPAH314, FPAH 313.
PSB	Proton Synchrotron Booster (CERN), four rings stacked vertically, 1.0 GeV (0.95/amu); K. Schindl, "The PS Booster as Pre-Injector for LHC", Particle Accelerators, 1997, Vol.58, p.63, K. Schindl, "High Brightness Hadron Injector for TeV Colliders", HEACC'98 Conf.; *ibid*, AC-98, p.10.
PSI Acc. Facility	The same as SINQ *see here*. Th. Stammbach, "Cyclotron Accelerators, Performance and New Developments", EPAC'02, FRXGB02. And CERN Symposium on R&D for High Intensity Proton Acc. Dec. 6-7, 1999.
PSR	PSR – Proton Storage Ring, 799 MeV, 100μA, 3.1×10^{13} ppp, 20 Hz at LANSCE, Los Alamos; D.H. Fitzgerald et al., PAC-97, p.1012, B. Blind et al., p.270; PAC-01: R. Macek, FOAB007; K.Y. Ng et al., RPAH021.
PWT Linac	4-cell Plane Wave Transformer Linac on 2856 MHz has designed and build at CAT, Indore: A. Kumar et al., EPAC'02, THPDO007.
Radioactive Beam Facilities or Factories (RIBF or RIA)	J.A. Nolen, "Overview of Linac Applications at Future Radioactive Beam Facilities", Linac-96, p.32; A.C. Mueller, "An Overview of Radioactive Beam Facilities", EPAC'00, p.73. There are description of operational principle and up-date state of next facilities (or projects) with primary and secondary beams accelerators: 1) ARENAS, ARENAS3 at Louvain-la-Neuve – 110 MeV Cyclotron + 44 MeV Cyclotron; 2) ATLAS at Argonne (*see here*) – 245 MV Linac + 70 MV (RFQ+ SC Linac). 3) Catania Nat. Lab. SC Cyclotron K=800 can be used with fragment separator ETNA or in ISOL-method with 15 MV Tandem (EXCYT). 4) DRIBS at Dubna – two Cyclotrons U400 and U400M in ISOL-method 5) GANIL (*see below* SPIRAL).

	6) HIRFL (*see here*) at Lanzhou uses a K=540 SS Cyclotron 7) HRIBF (*see here*) at Oak Ridge – 100 MeV Cyclotron+25 MV Tandem and 250 MeV Cyclotron+50 MV (Tandem +SC Booster); 8) INS at Tokyo – 67 MeV Cyclotron+14 MV (RFQ+IH Linac); 9) Tsukuba – 3 GeV Synchrotron + (RFQ+IH Linac); 10) ISAC/TRIUMF (*see here*) at Vancouver: 500 MeV H^- Cyclotron + 13 MV (RFQ+IH Linac). 11) Jyvaskyla, Finland: K=130 Cyclotron and R&D on the ISOL method. NSCL at Michigan St. U. uses SC K=1200 Cyclotron 12) PIAFE at Grenoble – Reactor (thermal n) + 160 MeV Cyclotron; 13) REX-ISOLDE (*see here*) at CERN – 1 GeV Synchrotron + 16 MV (RFQ+IH Linac); 14) RIKEN, Japan, (*see here*). It consists now of 540 MeV Ring Cyclotron, 70 MeV AVF Cyclotron and Heavy Ion Linac. In 2005 it will be commissioned a new complex of three ring cyclotrons with K=510 MeV, 980 MeV and 2500 MeV: Y. Yano et al., "RIKEN RI Beam Factory Project: Progress Report", PAC-01, ROPA007. 15) SPIRAL/GANIL (*see here*) at Caen: 400 MeV HI Cyclotron+265 MeV Cyclotron; 16) U.S. RIA Project (*see here.*): the use of a versatile primary accelerator (SC linac designed to allow multiple charge state acceleration and capable of providing beams from protons at 900 MeV to uranium at 400 MeV/u at power levels up to 400 kW); total project cost is $834M, start of construction – 2004, finish – 2009, G. Savard, PAC-01, ROPA002; C. Boutin, "Climbing out of the nuclear valley", CC Vol.42, No.2, p.15. Can be mentioned planned projects: SPES at Legnaro Nat. Lab., MAFF (*see here*) in Munich, SIRIUS at RAL UK and E-ARENA in Japan. See too last Proc. of the Fourth Int. Conf. on Radioactive Nuclear Beams and R. Eichhorn, "RF Structures for Linear Acceleration of Radioactive Beams", PAC-01, ROAA008.
RCMS	Rapid Cycling Medical Synchrotron delivers 3e12 protons per minute at energy up to 250 MeV and 60 Hz to cancer patients at Loma Linda Univ. Medical Center; S. Peggs et al., PAC-01, WPPH018; RFQ for: WPPH019.
REX-ISOLDE	The Radioactive beam Experiment REX-ISOLDE proposed for testing a new concept of post acceleration of radioactive ions is under progress at CERN. It uses EBIS, 4-Rod RFQ, then IH structure and three 7-gaps resonators accelerated ions A/q≤4.5 to 0.8-2.2 MeV/u. O. Kester, H. Bongers et al.: LINAC-98, TH4021; EPAC-98, p.728, then it was commissioned in 2001: CC Vol.42, #1, 2002, p.4 and PAC-01, ROPA003 and "Acceleration of RIBs at REX-ISOLDE", EPAC'02, THPLE069; LINAC-02: S. Emhofer, IH-Mode DTL, MO431; T. Sieber et al., TU301.
<u>RFQ Linacs</u>: some of them (from first publications or "mile stones") in	1) 6 MHz Spiral-type experimental RFQ for acceleration ions Bi^{2+} was constructed at ITEP; it was shown acceleration 5 mA ions Xe^{2+} from 130 keV to 1.35 MeV: I.M. Kapchinsky et al., "RF Linac for HIF Driver", LINAC- 86, p.318.

order of their working frequencies; a whole number of RFQ structures in the world that are in operation with beam exceeds now one hundred.	2) 12 MHz Split-coaxial RFQ: K.W. Shepard (ANL), "A Low-charge-state CW 12 MHz Split-coaxial RFQ", LINAC-98, TU2006; with redesigned vanes: 12 MHz 4-vane RFQ for acceleration up to CW of singly-charged heavy-ion ^{132}Xe and ^{84}Kr beams at ANL as part of injector to RIB Linac for RIA, M. Kelly et al., PAC-01, ROAA011. 3) 12 MHz Hybrid RFQ (H-RFQ): P.N. Ostroumov and A.A. Kolomiets, "New Concept for Acceleration of Slow, Low-Charge-State Heavy Ion Beams", PAC-01, FPAH-313. 4) 12.5 MHz and 54 MHz 4-rod RFQ: A. Schempp, "RFQ (12.5 MHz for Bi^+ and 54 MHz for He^+) Funneling Experiments for HIDIF", "The HIDIF Study"–Report GSI-98-06, p.11 and p.38. 5) 17.4-39 MHz, A/q 6-26, up to 450 keV/q (L vanes = 1.53 m) O. Kamigaito et al., "Recent Developments of the Folded-Coaxial RFQ for the RIKEN Heavy Ion Linac", new injection system instead of old C.-W. allows to increase on two orders intensity ions Xe^+: LINAC-98, TH4008. 6) 18-38 MHz 4-vane special type RFQ for operation with laser-type IS had proposed at RIKEN for acceleration ions $Al^{(2-4)+}$: M. Okamura et al., EPAC-00, THP5A05, p.848. 7) 26 MeV Integral Split Ring 300keV and 1 MeV (ISR-300, ISR-1000), d.f.=16.6% RFQs for implantation of O^+ and O^- ions have been built at Peking U.: J.X. Fang et al.: LINAC-02, TU414. 8) 27 MHz, "Ring-connected" type RFQ (d=0.88 m, L=12 m, 110 keV/u, 15 mA): V. Andreev et al., "Progress Work in a 27 MHz HI RFQ", LINAC-98, TH4089; V.A. Andreev (ITEP) et al., 4-Ladder type RFQ: "27 MHz RFQ Linac for ions 1/60 e/m (e.g. U^{4+})"; 17th RUPAC, Protvino 2000, Vol.1, p.327. 9) 35 MHz, split-ring 4-rod RFQ to accelerate ions of A/q ≤30 from 2 keV/u to 150 keV/u: R.E. Laxdalet et al., "Status of the ISAC Accelerator for Radioactive Beams"; "ISAC RFQ Frequency Source"; "8 m ISAC RFQ Mechanical Design", LINAC-98, MO4066, TU4087, TH4010, -4020 -4094; "Beam test results with the ISAC RFQ": PAC-99, FRA64-65; M. Pasini et al., EPAC'02, THPLE052. 10) 40 MHz IH-type CW RFQ for acceleration ions with charge to mass ratio 1:40 to 120 keV/u: H. Podlech et al., EPAC'02, THPLE063. 11) 58 MHz Model of the SC RFQ: V. Andreev et al., (INFN-LNL and ICR-Kyoto Univ.) "Scale RT Model of the SC RFQ1 for the PIAVE", LINAC-98, TH4085. 12) 80 MHz CW RFQ 100 keV – 2 MeV 100 mA D^+ beam for FMIT Facility (in 1984, then Project FMIT was terminated). 13) 80 MHz SC RFQ1 for PIAVE: G.Bisoffi et al., "First Results with the SC RFQ Resonator at INFN-LNL", EPAC-2000; TUOAF202. 14) 80.5 (and 57.5) MHz IH-type and 4-rod for U^{28+} from 12.4 keV/u to 292 keV/u (or 169 keV/u) 523 cm length RFQ for RIA Project: H. Podlech et al., EPAC'02, THPLE064-065. 15) 81 MHz, 3ms, 30 Hz, 4.4 m TIT-RFQ: 0.22 MeV/u Heavy Ion (from He to Xe^{10+}) Linac for plasma experiment of Tokyo Institute of

	Technology, C-96, p.92. 16) 85-120 MHz 4-rod RFQ: A. Schempp et al., "Operation of the VE-RFQ Injector for the ISL Cyclotron" at Hahn-Meitner-Institut (HMI at Berlin); 14 GHz ECR + RFQ for acceleration HI (q/A ≥ 0.15) to 90 – 360 keV/u, LINAC-98, TH4011; (*see too* RQ13 in C-96, p.130). 17) 101.28 MHz, d.f.=10%, 4-rod-λ/2 RFQ for HI A/q 3-4.5, from 5 to 300 keV/u (L=3 m): T. Sieber et al., "RFQ Accelerators for Radioactive Ion Beams", (for REX-ISOLDE), LINAC-98, TH4006. 18) 101.3 MHz, 4-rod RFQ as Pre-Injector for Linac 3 at CERN: 1000μs, 1-10 Hz, 250 keV/u Heavy Ion (Pb^{27+}); C-96, p.175. 19) 132.5 MHz 4-line RFQ (L=2.4 m, d=0.41 m) supplied by "double H" resonator, it accelerated proton beam from 0.51 to 3.26 MeV at 25 mA, 40 μs, 0.5 Hz. It is the first in the world test RFQ section constructed and launching at IHEP by I.M. Kapchinsky and V.A. Teplyakov with their collaborators. First publication is: "On Launching the Units of Linear Accelerator with RF Quadrupole Focusing", Preprint IHEP IHJ 72-17, Serpukhov 1972 (ИНЖ 72-17, Серпухов 1972). This new acceleration principle was published at the first by that two authors in Preprint № 673 "Ion Linac with Spatial-Homogeneous Strong Focusing", ITEP, Moscow, March 25 1969. 20) 148.5 MHz 4-line RFQ (L=1.36 m, d=0.46 m) supplied by "double H" resonator, it accelerated proton beam from 100 to 635 keV at 200 mA, 10 μs, 0.5 Hz. It is the first in the world RFQ constructed and put into long operation at IHEP by authors of this principle I.M. Kapchinsky and V.A. Teplyakov with their collaborators, see: N.I. Golosai et al., in "Atomnaya Energia", 1975, Vol.39, p.123). 21) 148.5 MHz 4-line RFQ (L=3.5 m, d=0.5 m) supplied by double H-resonator, it accelerated proton beam from 0.1 to 1.97 MeV at 100 mA, in bursts of 10 μs, 25 Hz as part of 15.9 MeV Linac URAL-15: B.M. Gorshkov et al., J. Techn. Phys. 1977, Vol.47, #11, p.2328. 22) 148.5 MHz, 10μs, 16.6 Hz, 100 mA H-type RFQ: V.A. Teplyakov et al., "30 MeV RFQ Linac Parameters". EPAC-88, p.605; AC-98, p.32. 23) 148.5 MHz 4-vane, 88 keV- 3 MeV RFQ (L=4.9 m) supplied by two power-feeding loops was launched with pulse beam current 240 mA at ITEP: I.M. Kapchinsky et al., "The Pulsed Proton Prototype of a High Current Ion Linac" LINAC-81, p.92. 24) 148.5 MHz 4-vane, 81 keV- 3 MeV RFQ-2, 300μs, 25 Hz is under construction at ITEP as Injector of Hybrid Neutron Generator: A.M. Kozodaev et al., 15th RUPAC, Protvino 1999, Vol.1, p.223. 25) 175 MHz 4-vane, 0.1- 8 MeV, 140mA CW D^+ RFQ for IFMIF: D. Li, R. Jameson et al., "Particle Dynamics Aspects...", EPAC'96, p.1221. 26) 198.2MHz, from 400 to 750 keV 4-vane RFQ at MMF p/H^- Linac: P.N. Ostroumov et al., PAC-99, FRA74. 27) 200 MHz, 4-rod (L=3.44 m) RFQD: A.M. Lombardi, "Decelerating and Accelerating RFQs", particular use for AD at CERN, LINAC-98, TU2005, 1st experience w. RFQD: W. Pirel et al., PAC-01, ROPA009. 28) 201 MHz, JAERI 4-vane, 100 keV- 2 MeV, 70mA, 700μs, 100 Hz

RFQ; C-96, p.86.

29) 201 MHz, 40–750 MeV, 60mA 4-rod pulse BPL-RFQ in Beijing Proton Linac's Injector soon will change of the present bulky C-W: Z.H. Luo, LINAC-98, TH4001.

30) 202 MHz, 750 MeV, 165mA, 500μs, 1 Hz 4-vane 1.8 m RFQ is new (1993) Pre-Injector of CERN proton and/or H^- Linac-2; C-96, p.173.

31) 202.5 MHz H^- 4-Rod RFQ: H. Vormann et al., "Design of a High Current RFQ Injector with High Duty Factor"; from injection energy 35 keV RFQ with directly cooled rods will provide 665 keV H^- beam current up to 50 mA at d.f. 2.5% instead of old C.-W. injector at ISIS Complex of RAL: LINAC-98, TH4012; EPAC-00, THP3B01 (p.869), THP4A03, THP4A05 and A. Letchford et al., EPAC'02, THPLE045.

32) 216.8 MHz 4-rod RFQ for acceleration heavy ions from 8 keV/u to 400 keV/u (L=1.45m) will to serve with IH structure as injector of medical synchrotron facility; A. Schempp et al., PAC-01, WPPH019.

33) 267 MHz, RFQ1-600 and RFQ1-1250 versions allow to obtain steady remarkably results: 75 and 55 mA proton CW beam current at accordingly 600 and 1250 keV (with new vanes) at CRNL, Canada in 1990-1992: G.M. Arbique et al., LINAC-92, p.55.

34) 297 MHz, 5 MeV, 40 mA CW proton 2H-cavity RFQ Proposal: A.G. Atachkin et al., 17th RUPAC, Protvino 2000, Vol.1, p.327.

35) 350 MHz, 4-vane (L=8 m), CW RFQ LEDA (*see here*): L.M. Young et al., "LEDA 6.7 MeV RFQ tuning",; H.V. Smith, Jr., J.D. Schneider et al., "Low-Energy Demonstration Accelerator (LEDA) Test Results and Plans", PAC-01, RPPH031.

36) 350 MHz, 4-vane, 3 MeV, 20 mA CW, (L=3.24 m) RFQ: J.M. Han et al., "Design of the KOMAC H^+/H^- RFQ Linac", LINAC-98, TH4005; "A 350 MHz CW RFQ Linac for the KOMAC Project", EPAC'00, THP4A16.

37) 352.2 MHz, 2 MeV; 80 mA D^- CW 4-vane RFQ RT or cooled to 26 K as first part for 7.54 MeV CWDD at ANL: G. McMichael et al., "CWDD at ANL – Status & Future Opportunities", LINAC-94, p.131.

38) 352.2 MHz, 80 keV-5 MeV, 30 mA proton CW 4-vane, 7.13 m long RFQ as front end of Linac for CEA transmutation program TRASCO: M. Communian et al., "TRASCO RFQ Design" EPAC-00, p.927.

39) 402.5 MHz 4-vane RFQ: 65 keV-2.5 MeV, 56 mA, 6.2% d.f., 60 Hz, 800 kW(RF), 1.85Kp, L=3.72 m SNS RFQ A. Ratti et al., "Conceptual Design of the SNS RFQ", LINAC-98, MO4090. J. Staples (LBNL) et al., "The SNS Front End Accelerator System", *ibid.*, MO4056; "The Fabrication and Initial Testing of the SNS RFQ", PAC-01, FPAH108.

40) 425 MHz 4-vane on energy from 100 to 640 keV proton RFQ named POP (proof-of-principle) - the first on the west - had been successfully launched (26 mA) at LANL in early 1980.

41) 425 MHz 4-vane RFQ named BEAR (Beam Experiment Aboard Rocket) at LANL had launched July 13, 1989 and following of beginning stage the SDI Program. On height of 100-200 km RFQ

	Linac accelerates to 1 MeV ~10 mA beam of H^- ions (neutralizer off) during 1444 pulse at 50 μsec, 5 Hz: O'Sfea et al., "A Linac in Space – the BEAR", LINAC-90, p.739. 42) 425 MHz, 3.84-4.86 MeV D^+ 4-vane RFQ (8 mA, 90 μs, 20-200 Hz, 4.4 m): R.W. Hamm (AccSys Technology) et al., "Variable Energy Deuteron RFQ System for Neutron Production", LINAC-98, TH4106. 43) 425 MHz, 3 MeV H^- 4-vane RFQ: R.W. Hamm (AccSys Technology) et al., "Performance of an AccSys Technology PL-7 Linac as Injector for the IUCF Cooler Injector Cyclotron", LINAC-98, MO4009. 44) 433 MHz, a new 2 MeV, 15 mA pulse RFQ fabricated of aluminum alloy AMG-6 has been built and tested at NPK LUTS (NIIEFA, St. Petersburg), M.F. Vorogushin et al., LINAC-98, TH4002.
RFQ Linacs in review papers	1. V.A. Teplyakov, "Investigation of an Accelerator with RFQ Focusing", RUPAC-1976, Vol.1, p.288. 2. I.M. Kapchinsky, "History of RFQ Development", LINAC-84, p.43. 3. R.A. Jameson, "Introduction to RFQ Session", LINAC-84, p.49. 4. I.M. Kapchinsky, "Theory of Resonance Linear Accelerators", Harwood Acad. Publ., 1985, p.p. 214-236. 5. K.R. Crandall et al., "RFQ Beam Dynamics Design Studies", LINAC-79, p.205. 6. E.A. Wadlinger, "RFQ Scaling-Law Implications and Examples", LINAC-86, p.346. 7. J. Staples, " RFQs in Research and Industry", LINAC-86, p.227. 8. A. Schempp, "Recent Progress in RFQs", LINAC-88, p.460. 9. G.E. McMichael, "Low β CW Linacs for Intense Beams", LINAC-90, p.518. 10. V.A. Tepliakov, "RFQ Focusing in Linacs", LINAC-92, p.21. 11. A. Schempp, "The Application of RFQs", LINAC-92, p.545. 12. R. Duperrier, J.M. Lagniel, "Field Description in an RFQ and its Effect on Beam Dynamics", LINAC-98, p.115. 13. A. Letchford, A. Schempp, "A Comparison of 4-Rod & 4-Vane RFQ Fields", EPAC'98, p.782. 14. B. Bondarev (MRTI), J.M. Lagniel (SEA, CEA), et al., "Using of LIDOS.RFQ Codes for CW RFQ Designing", LINAC-98, p.502, EPAC'02, WEPLE110. 15. V. Kapin et al., (Kyoto Univ.), "Design Considerations for Multiple-Beam RFQ Structures", LINAC-98, p.591. 16. K. Bongardt, M. Pabst and A.Letchfordt, "High Intensity Injector Linacs for Spallation Source", LINAC-98, p.339. 17. A.M. Lombardi, "Decelerating and Accelerating RFQs", LINAC-98, p.377. 18. A.M. Lombardi, "The SC RFQ Structures Review", 8th Workshop on SC RF, Padova, October 6-10, 1997, LNL-INFN (Rep) 133/98, p.97. 19. A. Ovsyannikov et al., "Beam Dynamic Optimization in RFQ Structures", EPAC'02, WEPRI065. 20. A. Schempp, "New Development in High DC, High Current RFQ", LINAC-02, WE201.

RHIC	Relativistic Heavy Ion Collider on 100 GeV/Amu (orbit length 3833 m) for protons and ions up to gold, with SC magnets and AGS as injector, constructed 1990/1999 and was switched on in 2000 at BNL (Upton). M. Harrison, "The RHIC Project", EPAC-96, p.13; S. Peggs, "RHIC Progress Report", Proc. EPAC-98, p.13; AC-98, p.71; CC, Vol.39, No.8, p.7. S. Ozaki, "RHIC Commissioning and First Results", PAC-01, MOAL001, W. Fischer, et al., *ibid.* MOPA003, W. MacKay et al., MOPA004; R.C. Lee, WPAH033; D. Trbojevic et al., "Commissioning of RHIC at Energy of 100 GeV/nucleon", at designed luminosity, PAC-01, RPAH124; EPAC'02, MOPLE062 and from 051 to 073; F. Pilat, "RHIC Status and Plans", *ibid.* TUXGB003; C. Boutin, "Climbing out of the nuclear valley"; CC Vol.42, # 2, 2002, p.15.
RIA US	U.S. RIA Project: the use of a versatile primary accelerator (SC linac designed to allow multiple charge state ions acceleration and capable of providing beams from protons at 900 MeV to uranium at 400 MeV/u at power levels up to 400 kW). Facility will consist of Driver Linac, Target, Separators and Post Accelerator. Total project cost is $834M, start of construction – 2004, finish – 2009. PAC-01: H. Podlech et al., 57.5 MHz RFQ versions and 2- and 4-gaps QWR, FPAH109; G. Savard, ROPA002; D. Gorelov et al., "RIA SC Driver Linac Beam Dynamic Optimization", FPAH317; C. Boutin, "Climbing out of the nuclear valley", CC Vol.42, # 2, 2002, p.15; EPAC'02: X. Wu et al., WEPLE093, THPLE062; LINAC-02: J. Nolen, "The U.S. RIA Project", D. Gorelov et al., MO302, MO412, MO441, TU426; J.W. Rathke et al.: 57.5 MHz CW RFQ, TU466-467; K.W. Shepard et al.: "The RIA Driver Linac", TH301 and "Prototype of SC 345 MHz 2-cell Spoke Cavity", TU469 and DTL: TU470.
RIB, or RIBF, or RIA facilities	Radioactive Ion Beam facilities (operated, constructed or proposed): INS Tanashi; ATLAS (ANL); BEARS (Berkley); HRIBF (at ORNL); REX-ISOLDE (CERN); ISAC and ISAC-II (TRIUMF); at Munich; SPIRAL (GANIL); BRNBF (Beijing); RIKEN (at IPCR, Saitama); INR (Trinity), EURISOL, *see here*; *and see too:* M. Lieuvin,"Design Issues of RIB Facilities", EPAC-96, TUX02T; P. Bricault, "Linacs for Exotic Beams" (with up-date state and table of Linac's parameters), LINAC-98, p.36; J.A. Lettry, "Review of RIB facilities", PAC-99, p.92. A.C.Mueller, "Survey of Radioactive Beam Facilities", EPAC-2000, TUZF201; PAC-01: G. Savard, "The U.S. Rare Isotope Accelerator Project", ROPA002, Y. Yano, "RIKEN RI Beam Factory Project: Progress Report", ROPA007. G Alton, "IS for ...", MOPB02; M. Tomizawa, "Linac Complex for RI Beam in JKJ Facility", APAC-01, THAM04; S. Arai et al., "Linac Complex in the JKJ RNB Facility", EPAC'02, THPLE001; O. Boine-Frankenheim, "Accelerator Challenges of Proposed RIB Facilities", EPAC'02, FRXGB001; C. Boutin, "Climbing out of the nuclear valley", CC Vol.42, No.2, March 2002, p.15 and Ed., p.p.16-17; A new Int. Research Facility SIS 100/200 has been proposed at GSI for RIB; the energy of U^{28+} ions will be 2.7 GeV/u or 23 GeV/u for fully stripped uranium ions, P. Spiller et al., EPAC'02, THPLE078. *See*: http: //www.ganil.fr.eurisol/

RIKEN - RI Beam Factory (RIBF or RARF)	Radioactive Ion Beam Factory at RIKEN – the Institute of Physical and Chemical Research (or RIKEN Accelerator Research Facility, Waco-shi, Saitama, Japan) consists now of 540 MeV Ring Cyclotron, 70 MeV AVF Cyclotron and Heavy Ion Linac (see NPN Int. Vol.5, No.1, 1995). A new complex will be based on MUSES Project (*see here* and NPN Int. Vol.8, No.4, 1998, pp.4-8); in 2005 will be commissioned a new complex of three ring cyclotrons with K=510 MeV, 980 MeV and 2500 MeV: Y. Yano et al., "RIKEN RI Beam Factory Project: Progress Report", PAC-01, ROPA007.
RILAC	RIKEN Linear Accelerator is Heavy Ion 16 MV, 30m, 6-tanks CW variable-frequency Wideroe Linac – Injector for the Ring Cyclotron. It was constructed 1974/1981 at RIKEN (Waco-shi, Saitama, Japan), LINAC-98, TU4085; PAC-01, ROPA-7; C-96, p.101. e-mail: *goto@ringps.riken.go.jp*
RQ13	In list "RFQ" *see* A. Schempp; e-mail: *a.schempp@em.uni-frankfurt.de*
RTM-70, RTM Injector	11.5 MeV, 2.5mA CW Injector of 70 MeV, 40 mA, 28 MHz Race Track Microtron at Moscow State U.; V.I. Shvedunov et al., PAC-01, WPPH063; C-96, p.157. e-mail: *shved@cdfe.npi.msu.su*
S-20	22 MeV, 200 mA, 3 GHz, 7μs, 100 Hz e^- Linac at Soltan INS, Swierk, Poland; C-96, p.155. e-mail: *sinsp@cx1.cyf.gov.pl*
SANDIA HI	SANDIA HI Post Accelerator 1.9 MeV/u (for Au^{28+}) 425 MHz Linac; C-96, p.40. e-mail: *hschon@somnet.sandia.gov*
SASE	Self Amplified Spontaneous Emission FEL (SLAC)
SATURNUS	15 MeV, 5 Hz, 2.5 μs e^- Linac constructed 1990/1993 at Los Angeles (UCLA); C-96, p.14. e-mail: *pellegrini@physics.ucla.edu*
SBLC	S-Band (3 GHz) Linear Collider Concept (DESY), PAC-97, Report 5P6; C-96, pp.188-9.
SBTF	S-Band Test Facility for Linear Collider at DESY: it is 450 MeV, 3 GHz, 0.4A, 2μs, 50 Hz e^- NC Linac, constructed in 1995; C-96, p.141. e-mail: *mpyhol@mint2.desy.de*
SCA	50 MeV, 40 A, 2ps, from 10ms (at 200-500 A) to CW 10kW, 25m Linear Accelerator with 55 SC cell 1.3 GHz, cavities constructed in 1971 at HEPL (Stanford) for FEL; C-96, p.21. e-mail: *todtt.smith@stanford.edu*
SCARLET	JAERI SC Accelerator (23 MeV, 0.5 GHz, 50μs-1ms, 10 Hz e^- Linac) for Research of Light Emission in operation (s.1993) at Tokai; C-96, p.85. e-mail: *minehara@felwu0.tokai.jaeri.go.jp*
SCSS	SCSS (SPring-8 Compact SASE Source) is a high peak-brilliance soft X-ray FEL Project with C-band (5712 MHz) 31-40 MeV/m Linac was started in Apr. 2001 at RIKEN, H. Matsumoto et al., LINAC-02, MO404; Y. Kim et al., 2kA peak beam current, MO429-430.
S-DALINAC	SC 3-fold Recirculating 130 MeV, 3 GHz, 60μA, CW e^- Linac at IfK, TU-Darmstadt; S. Kostial et al., "Operation of the S-D , Related Topics

(S-D)	and Developments", EPAC-2000, WEP3A17. C-96, p.136. M. Platz et al., "Latest Developments at the S-D", EPAC'02, TUPRI111; S. Watzlawik et al., LINAC-02, TU409. e-mail: *graef@linac.ikp.physik.th-darmstadt.de*
SDL Linac	A. Doyuran et al.: The deep UV FEL experiment is being commissioned in the Source Development Laboratory at NSLS, NY. Initial FEL wavelength is 400nm at 140 MeV e^- beam energy, EPAC'02, TUPRI100-103.
SESAME	The SESAME Project aims to establish a major international center in Middle East region; it is 1 – 2 GeV SRS based on gift from Germany of the 0.8 GeV BESSY I, D. Einfeld et al., EPAC'02, TUPLE027.
SIBERIA, SIBERIA-2	SIBERIA is complex consisting of 80 MeV e^- Linac, 450 MeV 200mA Buster and main 2.5 GeV 100mA ring SRS; V.V. Anashin EPAC-88, p.57; V.N. Korchuganov et al., 15th RUPAC, Vol.2, p.62; I. Krylov et al., "SIBERIA-2: Experience of the First Year of Regular Operation", PAC-01, WPPH098.
SILHI	High-Intensity Light-Ion (ECR) Source is a part of IPHI (for 5 MeV RFQ + 10 MeV DTL approved 50 MFF and 45 man-years/year) and TRISPAL (*see here*) CEA CRNS-IN2P3 R&D programs; *see* J.M. Lagniel, "High Intensity Linac Studies in France" Linac-98, p.706 and CERN Symposium on R&D for High Intensity Proton Accelerators Dec. 6-7, 1999; R. Gobin et al.: more than 130 mA pulse and CW proton and pulse deuteron beam at 95 keV are now routinely produced, EPAC'02, THPRI003.
SINQ	**SINQ** (PSI- Paul Scherrer Inst., early SIN, Switzerland): 72 and 590 MeV Two Proton Cyclotrons: 1400 - 1520 μA, CW, 885 kW, (in operation since 1996, beam yield in 1997 is 500 mAxhr), EPAC-98, p.98 (and "Villigen World Record Cyclotron Beam Power", CC, Vol. 36, №3, April/May 1996, p.5). On September 18, 1995 the PSI Cyclotron crew reached output beam current 1.52 mA at 590 MeV i.e., 900 kW, world record! CC, Vol.36, No.3, 1996, p.5. Next plans to rise beam current on Cyclotrons: Th. Stammbach, "Cyclotron Accelerators, Performance and New Developments", EPAC'02, FRXGB02 and see "CERN Symposium on R&D for High Intensity Proton Accelerators", Dec. 6-7, 1999.
SIS, SIS 100/200	Schwer Ionen Synchrotron (18 T-m, 50-2000 MeV/u for ions up to U^{73+}) constructed 1986/1989 at Darmstadt; N. Anget EPAC-96, p.125; C-89, p.51; K. Blasche, "SIS Status Report", GSI 99-1, May 1999, p.122; In 1998 machine operated 5340h. Its e^- cooler: M. Steck, EPAC-98, p.510. A new Int. Research Facility SIS 100/200 and 3 cooler SR has been proposed at GSI for RIB and antiproton beams. The energy of U^{28+} ions will be 2.7 GeV/u and 23 GeV/u for fully stripped uranium ions, P. Spiller et al., EPAC'02, THPLE078; K. Blasche et al., "SIS Status Report", GSI 2002-1, April 2002, p.195 and D. Wilms et al., "Operation Report of UNILAC and SIS", p.189.
SLAC – 3-km (Two – Mile) e^+/e^-	Stanford 56 GeV e^+/e^- total length 3050 m Linac was constructed 1962/1966. This S-band RF Linac is capable of producing single bunch and multibunch electron beams, and single bunch positron beams in range

Linac	of energies from several GeV up to 56 GeV. C-96, p.16-17; AC-98, p.57. It serves as PEP II Injector: EPAC-98, p.33; F.J. Deckeretal, "SLAC Linac during the PEP-II Era", PAC-99, p.2987; M. Riordan, "Forty years of research on the structure of matter" at SLAC, CC Vol.42 № 3, p.19. e-mail: *decker@stanford.edu*
SLC	SLAC Linear e+/e- Collider on 46.5GeV, total length 3050 m with Luminosity reached to 10E31 was constructed 1983/1987 in Stanford. N. Phinney, EPAC-98, p.245. AC-98, p.56. But the last one-year successful run SLC finished 8 June 1998 may be will be really the last one, *see* CC, Vol.38, No7, October 1998, p.29; F.-J. Decker et al., "High Power Beam at SLAC", PAC-01, FPAH110.
SLS	Swiss Light Source is Project of SR Facility (100 MeV Linac, 2.4 GeV Booster SR r=288m) is built at the Paul Scherrer Institute in 2001. W. Joho, "Design of SLS", EPAC-94; CC, Vol. 37, No.9, 1997, p.3. L. Rivkin et al., Magnetic field measurement, 17th RUPAC, Vol.1, p.29; Its commissioning: A. Streun, PAC-01 TOPA003; M. Boge, "First Operation of the SLS", EPAC'02, TUXLA001, TUPRI012, TUPRI098; P.-R. Kettle, "SLS Set to be a World-class Facility" CC, V. 42, #3, 2002, p.24.
SNS Project: SNS Linac +AC (ANL, LANL, BNL, LBNL, ORNL, TJNAF, DOE US)	Spallation 2 MW Neutron Source is being implemented by six US Labs.: LBNL is responsible for high brightness 35-70mA H^- ion source and 402.5 MHz, 2.5 MeV, d.f. 6-12% RFQ; LANL is responsible for 402.5/805 MHz Linac to bring the beam to the full energy of 1 GeV; BNL is responsible for AC - the accumulator ring to compress the linac beam after 1200 turns injection into sharp 600 ns 60 Hz intense (10^{14}) bursts of protons and deliver them through RTBT channel on the target; TJNAF is responsible for cryogenic problems, equipment and systems; Oak Ridge is responsible for the mercury target and all conventional facilities; ANL is responsible for Project coordination and design experimental base. SNS is DOE/ER's number one priority for new construction starts on 1999 and will be finished on 2005 (total cost of the Project - $1300M, incl. $340M for Linac). A lot of papers on the world powerful HPPL and NG published on conferences last 5 years will be extremely useful to all accelerator facilities designers. *Accumulating Ring (AR): AR Dynamics & Design*: PAC-97: W.T. Weng et al., p.970; C.J. Gardner, p.962; J. Tuzzolo et al., p.3233; A.U. Luccio et al., p.1883; PAC-99: J.A. Holmes et al., p.109; V. Danilov et al., p.1198; M. Blaskiewicz, p.1611; J. Beebe-Wang et al., p.1743 and p.2843; C.J. Gardner et al., p.3182; EPAC'00: M. Blaskiewicz, p.1110, p.1942; J. Galambos et al., p.1372; J. Beebe-Wang et al., p.1465; A.V. Fedotov et al., p.1492; N. Tsoupas et al., p.1581; PAC-01: Y. Papaphilippou et al., WOPB011;A. Fedotov et al., RPAH004; EPAC'02: N. Catalan-Lasheras et al., WEPLE037; M. Pivi et al., WEPDO006; S. Cousineau et al., THPLE016, -18; J.A. Holmes et al., THPLE022; A.V. Fedotov et al., WEPLE057; N. Malitsky et al., WEPRI061. *AR Beam Extraction & Kickers:* EPAC'00: N. Tsoupas et al., p.2270; H. Ludewig et al., p.2438;

	PAC-01: S. Kurennoy, Y. Lee, TPPH075; W. Zhang et al., FPAH022; EPAC'02: J.-L. Mi et al., TUPLE068; D. Davino et al., WEPRI036; S. Kurennoy, WEPRI108. *AR Beam Injection:* PAC-99: J. Galambos et al., p.3140; C.J. Liaw et al., p.3300; PAC-01: J. Beebe-Wang et al., TPAH128; S. Cousineau et al., RPAH028; D. Raparia et al., RPPH018; C.J. Liaw et al., TPAH138; J. Beebe-Wang et al., TPPH005; EPAC'02: J. Brodowski et al., TUPDO036. *AR Beam Loss & Collimation:* PAC-99: H. Ludewig et al., p.548; N. Malitsky et al., p.2713; D. Leon et al., p.3303; S.Y. Zhang, p.3297; J. Wei et al., p.3185; EPAC'00: S.Y. Zhang et al., p.987; J. Wei et al., p.981; Yu. Senichev et al., p.863; A.V. Fedotov et al., p.1289; D.T. Abell et al., p.2107; PAC-01: N. Catalan-Lasheras et al., RPPH019, RPPH050; EPAC'02: P. Cameron, THPRI071; S. Cousineau et al., THPLE017-018; J. Wei et al., THPLE014, -015; LINAC-02: Y.Y. Lee et al., MO413. *AR Focusing & Magnets:* PAC-99: G. Danby et al., p.3333; EPAC'00: J. Wei et al., p.978, p.1880; J. Beebe-Wang et al., p.1286; I. Papaphilippou et al., p.1453; PAC-01: J. Holmes et al., RPPH307; EPAC'02: J.-G. Wang et al., TUPDO039; I. Papaphilippou et al., WEPLE055; N. Tsoupas et al., TUPDO037; S. Dewan et al., MOPLE107. *AR Resonators & RF Supply:* EPAC'00: J.-G. Wang et al., p.972; EPAC'02: A. Zaltsman et al., TUPLE101; PAC-01: M. Blaskiewicz, ROAA007. *AR Vacuum System:* PAC-01: H.C. Hseuh et al., MPPH006; R. TODD et al., WPAH034; EPAC'02: H.C. Hseuh et al., WEPDO37; V.V. Danilov et al., WEPRI117. *Applications in Industry & Medicine:* LINAC-00: T.E. Mason et al., FR203. *Beam Diagnostics & Instrumentation:* EPAC'00: M. Kesselman et al., p.1750; S.S. Kurennoy et al., p.1768; PAC-01: R. Connoly et al., TPAH034; T. Shea, ROAB001; L.A. Day et al., TPAH040; R. Hardekopf et al., TPAH041; A. Aleksandrov, TPAH048; J. Power et al., TPAH070; M. Kesselman, WPAH102; C.J. Liaf et al., WPAH120; M. Plum et al., WPAH124; EPAC'02: M. Kesselman et al., THPRI078; R. Connolly et al., THPRI079; LINAC-02: J. Nolen, MO204; D. Jeon, MO422; M.A. Plum et al., MO458. *Beam Dynamics calculations and simulations, Codes:* PAC-97: H. Takeda et al., p.1171; PAC-01: S. Nath et al., TOPB003LINAC-02: E. Tanke et al., TH424, -429. *Beam Loss and Halo Problem:* EPAC'02: J. Wei et al., THPLE015; S. Nath et al., THPLE024; N. Simos et al., THPLE016; LINAC-02: D. Jeon et al., MO437. *Beam Loss, & Dose Measurements:* EPAC-00: N. Catalan-Lasheras et al., p.924, and p.2438, and p.2438; EPAC'02: N. Catalan-Lasheras et al., THPLE011. *Behavior at Fault Conditions, RAMI:* PAC-01: P. Tallerico et al., MPPH112; L. Doolittle et al., WPAH125. *Bunching and Chopping of the Beam:* PAC-97: S.S. Kurennoy et al., p.3731; PAC-99: S.S. Kurennoy et al., p.1399; EPAC'00: S.S. Kurennoy et al., p.336; PAC-01: S.S. Kurennoy et al., TPAH098; L. Doolittle et al., WPAH125; LINAC-02: S. Nath et al., MO440. *CCDTL and CCL NC Cavities & Sections:* PAC-99: J.H. Billen et al., p.3585; F.L. Krawczyck et al., p.3588; L. Parietti et al., p.3591. PAC-01: J. Billen et al., MPPH139; EPAC'02: M. Pekeler et al., TUPDO008. *CCL SC Cavities & Sections:* PAC-99: J.H.

	Billen et al., p.3585; LINAC-00: J. Stovall et al., TUD22; PAC-01: S. Kim et al., MPPH149; I.E. Campisi et al., MPPH153; M. Stirbet et al., MPPH154; EPAC'02: Z. Chen, THPLE023; P. Kneisel et al., TUXGB001, THPDO015; M. Pekeler et al., TUPDO008; P. Kneisel et al., ROAA005; LINAC-02: S.H. Kim, WE203. *Commissioning RFQ, DTL, CCL and other cavities, their tuning:* PAC-01: D. Jeon et al., FPAH319; L. Young, ROPA005; LINAC-02: A. Ratti et al., TU412; E. Tanke, TU422; D. Jeon et al., TU427; J.W. Staples et al., TU483; Y. Kang et al., TH456. *Common Consideration of the Project:* W. Kohn, "Neutron Sources for America's Future", BESAC Panel on Neutron Sources, DOE 1993; LINAC-96: T.P. Wangler et al., p.749; EPAC-96: B.R. Appleton, p.575; PAC-97: B.R. Appleton, p.20; LINAC-98: K. Bongardt et al., p.339; A. Jason, p.415; EPAC-98: J.R. Alonso, p.493; PAC-99: J.R. Alonso, p.574; R.A. Hardekopf et al., p.3597; LINAC-00: R.L. Kustom, TU101; PAC-01: J. Wei et al., WOAA006; EPAC'02: N. Holtkamp, TUZGB002; W.-T. Weng et al., THPLE013; LINAC-02: M.M. White, MO101; S. Nath et al., TH413. *Control electronics and systems, EPICS use:* PAC-99: W.R. Devan et al., p.335; PAC-01: L. Dalesio, TOPB007; EPAC'02: J. Galambos et al., THPLE021; LINAC-02: A.H. Regan, TH104; D.P. Gurd, TH441. *Control of RF Resonance & Beam Parameters:* PAC-01: S. Ellis, MPPH140; J.R. Bernardin et al., TPAH095; R. Sundelin et al., TPPH135; D. Jeon et al., TPPH313; LINAC-02: S.I. Kwon, TU462-463; M. Doleans et al., TH430. *Cooling and Heating by RF and Beam:* PAC-97: J. Duke, p.204. *Cryomodule & Cryogenic Systems:* PAC-01: W.J. Schneider et al., MPPH162; F.Z. Hsiao et al., TPAH162; C. Rode, ROPB008; LINAC-02: I.E. Campisi et al., TU476. *Engineering:* PAC-01: W. Wan et al., TPAH114; D. Katonak et al., TPAH097; N. Bultman, WPAH045; P. Tallerico et al., RPPH066. *Focusing RF and Magnetic Elements (NC and SC):* PAC-97: J. Tuzzolo et al., p.3233; *Front End:* PAC-97: J.W. Staples, p.1174; LINAC-98: J. Staples, p.177. EPAC'00: R. Keller, p.1657; PAC-01: R. Keller, MOPB005; EPAC'02: R. Keller, THPLE012; LINAC-02, J.W. Staples et al., TU483. *HEBT, Beam Expansion, RTBT, Targets, Beam Stops:* PAC-97: D. Raparia et al., p.162, T.A. Gabriel et al., p.86; PAC-99: D. Raparia et al., p.1297; PAC-01: N. Simos et al., TPAH074; T.A. Gabriel et al., FOAC008; W.T. Weng et al., ROPA006; EPAC'02: J.-G. Wang et al., TUPDO038, -39; LINAC-02: D. Raparia et al., TU415. *Ion Source, Injection:* PAC-97: L.N. Blumberg et al., p.159, M.A. Leitner et al., p.2758; PAC-99: M.A. Leitner et al., p.1911; EPAC'00: S. Hoekstra et al., p.1604; EPAC'02: R. Welton et al., THPLE019; J. Peters, THPRI025. *LEBT, MEBT, Beam transportation, Matching of beam:* PAC-99: J.W. Staples et al., p.1961; D.W. Cheng et al., p.1958; PAC-01: G. Gillespie et al., RPAH109; EPAC'02: A.V. Aleksandrov et al., THPLE020. *LLRF, Control of amplitude and phase of RF:* PAC-99: S. Kwon et al., p.1067; PAC-01: A.H. Regan et al., MPPH015; C.R. Rose, MPPH016; S. Kwon et al., TPAH008, Y,-M. Wang et al., TPAH301; LINAC-02: L. Doolittle et al., . *Mechanical, Technological & Fabrication Solutions:* PAC-99:

	S.K. Mukherjee et al., p.1914; N.K. Bultmann et al., p.3594; PAC-01: J. Hogan, MPPH159; D. Oshatz, et al., TPAH152LINAC-02: T. Ilg et al., TH462. *Power Supply and Distribution Systems:* EPAC'00: R.F. Lambiase et al., p.2211; PAC-01: R.F. Lambiase et al., FPAH005; EPAC'02: R. Lambiase et al., MOPLE120. *Pulse Power Supply, Modulators, Pulse Generators:* PAC-97:; LINAC-98: PAC-99: W.A. Reass et al., p.426; PAC-01: W.A. Reass et al., MPPH110; EPAC'02: S. Dewan et al., MOPLE107; R. Lambiase et al., MOPLE120; LINAC-02: W. Reass et al., WE202. *RF High Power Systems & Elements:* PAC-97: P. Tallerico et al., p.3138; LINAC-98: P. Tallerico et al., p.567; PAC-99: M. Lynch et al., p.453; LINAC-00: M. Lynch et al., THE01; PAC-01: D. Rees et al., MPPH099; M. Lynch et al., ROAA010; EPAC'02: S. Lenci et al., TUPLE119; LINAC-02: M.T. Lynch et al., MO465; LINAC-02: S. Lenci et al., TU484. *RF Windows & Loops (Power Couplers):* PAC-01: Z. Chen, MPPH055; Y. Kang et al., MPPH147; M. Stirbet et al., MPPH148; EPAC'02: M. Stirbet et al., THPDO016; I.E. Campisi, TUXGB002; LINAC-02: Y. Kang et al., TH455. *RFQ: Design and Parameters:* PAC-97: M.D. Hoff et al., p.1096; LINAC-98: A. Ratti et al., p.276, p.600; PAC-99: A. Ratti et al., p.884; EPAC'00: A. Ratti et al., p.495. *Vacuum Requirements and Systems:* PAC-99: H.-C. Hseuh et al., p.1345; PAC-01: Z. Chen, WPAH046; S. Shen et al., WPAH048; EPAC'02: H.-C. Hseuh et al.,WEPDO037. Very many data of SNS conception and systems design are considered on a number of different others conferences.
SOLEIL	SC Storage Ring for FEL (after 2002 with ELIOS - 100 MeV e^- Injector Linac and 2.5 GeV Booster Synchrotron) at Lure, Orsay. M.P. Level, "Status of SOLEIL Project", EPAC-98, p.599. But in CC Vol.40, No.4, p.7 have been noted that their own SOLEIL Project France government was cancelled and decided instead to become a major partner in UK Diamond SRS Project at RAL (Oxford) that should be operational in 2006. And nevertheless construction phase of SOLEIL will begin on 2002: EPAC'02: M.-P. Level et al., "Status of the SOLEIL", TUALA001 and TUPLE029; its new Booster: A. Loulergue et al., TUPRI096; SC Cavity for ESRF Ring: J. Jacob et al., WEBLA002.
SPEAR, -2, -3	R. Hettel et al., "Design of the SPEAR-3 Light Source", EPAC-2000, WEP2A18. The venerable SPEAR storage ring, in service since 1972, will be replaced beginning from 2003 with a modern, low emittance ring optimized for producing beam currents 500 mA at 3 GeV and high flux, high brightness photon beams at the SSRL; M. Riordan, "Forty years of research on the structure of matter" at SLAC, CC Vol.42, 2003, № 3, p.19. PAC-01: Yu. Nosochkov et al., WPPH086, S. Park, WPPH087, W. Corbett, WPPH091; J. Corbett, "Status of the SPEAR-3 Light Source", EPAC'02, TUPLE009.
SPIRAL	It is Radioactive Ion Beam Facility under reconstruction at GANIL (Caen, France). M. Lieuvin, "Commissioning of SPIRAL", EPAC-98, p.63.

SPL (SC 2 GeV H^- CERN Linac)	Project of SPL (SC Proton Linac) 2.2 GeV 352 MHz 4 MW H^- beam power (10^{16} protons per second, d.f. 14%, total length 691 m) proposed at CERN for a future Neutrino Factory and other new or existing facilities. R. Garoby et al., "Feasibility Study of a 2 GeV SC H^- Linac as Injector for the CERN PS". This preliminary feasibility study is based on the availability of the CERN LEP2 SC RF system after LEP decommissioning. The option supposes to use this system as part of a 2.2 GeV H^- Linac for two-fold increase of injecting beam brightness, that is useful for LHC, H. Haseroth et al., "Feasibility Study of a 2 GeV SC H^- Linac as Injector for the CERN PS", LINAC-98, MO4026; F. Gerigk, M. Vretenar et al., PAC-01, FPAH-099; E. Chiaveri, "A High Power SC H^- Linac (SPL) at CERN", CERN-SL-2001-060 DI; J. Tuckmantel, Simulations of SPL RF System with beam: CERN-SL-2001-056 HRF; EPAC'02: M. Vretenar, F. Caspers et al., "Progress in the Design of the SPL", THPLE026, -027; M. Vretenar et al., LINAC-02, MO415-16.
SPring-8 and SR; Compact SASE Source (SCSS)	Project SPring-8 (Super Proton ring-8 GeV) at RIKEN (Institute of Physical and Chemical Research and JAERI) consists of a 1.2 GeV electron Linac, an 8 GeV Booster Synchrotron and a low emittance Storage Ring (New SUBARU) with 40 straight sections of 6.5 m long and 4 ones of 30 m long. Project since August 1996 is in stage of commissioning, it will be world's most brilliant synchrotron radiation (SR) source, its design goal is 10^{20} photons/sxsq.mmxsq.mrad. H. Kamitsubo, "First Commissioning of Spring-8", PAC-97, 1BC4 and PAC-99, TUCL1; C-96, pp.76-77. H. Ohshima et al., "Operational Performance of the SPring-8 SR", PAC-01, WPPH327 and TPPH132; H. Tanaka, "Recent Progress of Spring-8 Facility", APAC-01, MOC05; T. Shintake et al.: SPring-8 SASE-FEL Project is now under construction in Japan, EPAC'02, TUPRI116-120 and C-band Linac for SASE-FEL, LINAC-02, WE101. E-mail: *yokomizo@haru01.spring8.or.jp*
SPS	Super Proton Synchrotron / heavy ion accelerator; 450GeV D=4400 m; Construction started – 1971, first beam – 1976 (1986 – for heavy ions). X. Altune et al., "The SPS as Lead-Ion Accelerator", EPAC-96, p.383; P. Collier, "The SPS as LHC Injector", PAC-01, RPAH128. AC-98, p.8.
SRRC	Preinjector 50 MeV, 3 GHz, 24mA, 0.2-2μs, 10 Hz electron Linac (since 1992) for Taiwan SRRC 1.3 GeV Booster Synchrotron; J. Ching, EPAC-98, p.608. C-96, p.103. T.S.Ueng et al., "Top-Up Mode Operation at SSRC", EPAC'00, TUP1B20; C.-S. Hwang et al., EPAC'02, TUPLE037. e-mail: *ueng@srrc01.srrc.gov.tw*
SRS, SRS Review	Synchrotron Radiation Source at CLRC, Daresbury, UK; its 15 MeV, 30mA, 3 GHz, 2μs, 10 Hz e^- Linac-Injector; C-96, p.184. e-mail: *d.m/dykes@dl.ac.uk*. "Overview of Synchrotron Radiation and FEL Projects", R.P. Walker, EPAC-98, p.133.
SSC	Project of 20 TeV, 87 km length proton Superconducting Supercollider in Texas was proposed (1987), preliminary approved (1990) and begins

	detail development, but then (28 October 1993) it was canceled by US Senate and Bill Clinton. Some of SSC decisions are used now in LHC.
SSRF	Current Status of the 3.5 GeV SSRF (Shanghai Synchrotron Radiation Facility) Project is under design and R&D at Shanghai Nat. SR Center; Z. Zhao et al., PAC-01, WPPH328 and EPAC'02, TUPLE010; S.Y. Chen, "The SSRF Accelerator Complex", APAC-01, TUAM02.
SSRL Linac	Stanford Synchrotron Radiation Laboratory 110 MeV, 2.8 GHz RF e^- Linac – Injector for SPEAR constructed 1990; C-96 p.20; LINAC-98, MO4104; M. Riordan, "Forty years of researches at SLAC", CC Vol.42 № 3, p.19-21. e-mail: *spark@slac.stanford.edu*
Stony Brook HI SC Linac	Heavy Ion (Li_6-Zr_{90}) 12 MeV/u 16 Quarter-Wave 150 MHz SC (lead-tin on copper) Post-Tandem Linac constructed (1983) at Stony Brook U.; J.W. Noe, Rev. Sci. Instr. V. 57, p.757, 1986; C-96, p.52. e-mail: *john.noe@sunysb.edu*
SUNSHINE	33 MeV, 0.4 A, 2.86 GHz, 1.5μs, 10 Hz e^- Linac for sub-ps bunches (1992/1993) at Stanford; C-96, p.22. e-mail: *widemann@slac.stanford.edu*
Super-ACO	800 MeV, 100 MHz Linac for SR FEL at ESPCI, Paris; M. Billardon, EPAC-98, p.670; M. Belgroume et al., EPAC'02, WEPLE010.
Super SOR SR	A high-brilliance VUV and soft X-ray SR source (1.6 GeV ring) is being planned to construct at Tokyo U; T. Koseki at al., EPAC'02, TUPLE065.
SVAAP	SC Vertical Accelerator to Applied Purposes: 5-7.5 MeV, 10μA CW e^- beam current for Tc thin SC layers preparation. L.M. Sevryukova et al., EPAC-98, p.1342 and p.1344; 16th RUPAC, Vol.1, p.120; SC RF Structure, 17th RUPAC, Vol.1, p.163; EPAC'02, THPDO020.
TELL	Tsukuba Electrotechnical Laboratory Linac at Ibaraki: 0.5 GeV, 2.8 GHz, 1-500ns, 250 Hz, 0.25 A e^- Injector for 3 storage rings Linac; C-96, p.98. e-mail: *tyamazak@etl.go.jp*
TESLA, TESLA FEL TESLA-500 (and *see here* TTF)	TeV Superconducting Linear Accelerator- Linear Collider total length 29 km at DESY. C-96, pp.188-9; B. Anne, " TESLA Test Facility: Status and Results", EPAC-96, p.52; D. Trines, "Status of the TESLA Design", Linac-98 Conf., Chicago, 1998; R.Brinkmann, "Linear Collider Projects at DESY", Proc. EPAC-1998, p.53; CC Vol. 37, 1997, p.12. J. Rossbach, "The TESLA Free Electron Laser – Concept and Status", LINAC-98, TU2001; M.V. Yurkov, "TESLA-500 Project" 15th RUPAC, Vol.1, p.27; I. Flegel, CC Vol.41, #5, p.20; O. Napoly, "Highlights from the TESLA TDP", PAC-01, WOPA007; P. Castro, "Performance of the TESLA Facility Linac", EPAC'02, MOPRI036; 35 MV/m in 9-cell cavity: CC Vol.42, #5, p.10; K. Floettmann, "Linear Collider and X-Ray FEL", LINAC-02, TU101. *http://tesla.desy.de/new_pages/TDR_CD/start.html*
TEUFEL	7 MeV, 2 A (5-7nC), 1.3 GHz, FEL-Driver and e^- Injector for 25 MeV Microtron at U. of Twenty, Netherlands (since 1993); C-96, p.154. e-mail: *j.w.j.verschuur@tn.utwente.nl*

TEVATRON, *see too*: **FermiLab - Accumulator, - Booster, - Debuncher, - Main Injector, - 400 MeV Linac, - 1 GeV Linac**	FNAL Hadron (proton-antiproton) Collider: Proton Synchrotron on 0.8/1.8TeV and 2x1000 GeV Storage Ring D=2 km, with Luminosity 2.5x10E31) constructed at FNAL 1979/1985. C-89, p.21; AC-98, p.62; J.P.Marriner et al., "TEVATRON Luminosity Upgrade Project", EPAC-98, p.8. "FNAL 8 GeV Accumulator Ring", D=477 m. "FNAL Antiproton Debuncher Ring", D=505 m, *ibid.* p.64; D.A. Finley, "Tevatron Status and Future Plans", 15th RUPAC, Vol. 1, p.13; S.D. Holmes, "Tevatron Goals for the Coming Decade", PAC-99, p.43; M. Church, "Tevatron Run II Performance and Plans", EPAC'02, MOYGB001.
TIPr-1 (ITEP)	Heavy metallic ion (from Cu^{+} to U^{4+}) Linac – Prototype of HIF Driver, C-96, p.161. e-mail: *kulevoj@mvax3.itep.ru*
TIT-IH-2 Linac	2.4 MeV/u, 47 MHz, HI (P, C^{4+} and C^{9+}) Tokyo Institute of Technology Linac, C-96, p.90. e-mail: *thattori@nr.titech.ac.jp*
TJNAF	Thomas Jefferson National Accelerator Facility - *see here* CEBAF.
TLS	Taiwan Light Source at SRRC (Synchrotron Radiation Research Center in Taiwan) is 3-rd generation light source. R.C. Sah et al., "Operation and Upgrades at SRRC", EPAC-2000, WEP2B10.
TOP-LINAC	TOP (Terapia Oncologica con Protoni) 65-200 MeV 3 GHz, 7μs, 300 Hz, up to $5\mu A_{pulse}$ LINAC with SCDTL module is project of a compact proton-therapy accelerator: L. Picardi (ENEA), PAC-01, WPPH021; EPAC'02, THBLA001.
TRAK RF	An integrated software system has been developed to model EM fields and charged particle orbits in high-power RF devices. The primary application (for APT Project) is simulation of electron multipactoring in linac vacuum windows: S. Humphries, D. Rees, PAC-97, 5C10.
TRASCO	INFN (Genova and Milano-LASA), jointly with ENEA, is working at the design study for a 30 MW, 350 MHz SC Linac driven waste transmutation subcritical system, TRASCO (TRAnsmutazione di SCOrie). C. Pagani, "Status of the INFN High Current SC Proton Linac for Waste Transmutation" LINAC-98, TH4108 and EPAC-98, p.1870, and LINAC-96, "A High Current 352 MHz SC Proton Linac", p.107 and EPAC'00, p.957; A. Pisent, "INFN-LNS and LNL R&D for a 100 MeV p/d Linac", CERN Symposium on R&D for High Intensity Proton Accelerators Dec 6-7, 1999; C. Pagani, "Status of the High Energy SC Linac for the TRASCO Program", PAC-01, RPPH304; EPAC'02: P. Michelato et al., MOPRI116; P. Pierini, M. Napolitano et al., INFN, "Status of the High Current Proton Accelerator for the TRASCO Program", THBLA002; LINAC-02: G. Ciavola et al., "High current IS & LEBT", TH433; A. Palmieri et al., "RFQ High Power Coupler", TH453.
TRISPAL	TRItium SPALlation is the French Project for production of tritium needed for warheads. It consists of 600 MeV, 40mA CW proton NC Linac (5 MeV RFQ, 100 MeV DTL and then CCL, 350 MHz everywhere). It is shown that choice so low frequency for CCL do not deteriorate effective

	shunt impedance. M. Prome, (CEA Saclay), LINAC-96, p.9; J.M. Lagniel, "High Intensity Linac Studies in France", LINAC-98, WE2003; H. Safa, ADTTA-99, p.955-963.
TRISTAN	30 GeV e^+/e^- Collider (orbit length 3018 m) worked at KEK (Tsukuba, Japan) in 1986-1995, then it reconstructed in KEKB.
TRITRON	Project of separated orbit Cyclotron with SC RF cavities and magnet. Cazan, EPAC-98, p.556.
TRIUMF	520 MeV, 160μAavr. (beam pulses from 4 to 200ns separated up to 1-2μs) H^- Cyclotron at Vancouver is "Meson Fabric" operational since 1974; C-89, p.45; see too E.W. Blackmore et al., "Operation of the TRIUMF Proton Therapy Facility", PAC-97, p.3831; G. Dutto, "Operational Performance, Developments, and Refurbishing of the 500 MeV H- Cyclotron ...", PAC-01, WPPH059.
TSRF	Tohoku U. SR Facility 1.8 GeV SRS Project based on existing 300 MeV e^- Linac and 1.2 GeV Stretcher Booster: N. Kanaya, PAC-99, p.664.
TTF, TTF Linac	TESLA Test Facility (DESY) will test components required by DESY's candidate for a future high-energy linear collider TESLA. Now TTF has just one module (with beam). In its first stage in 1999 it will produce 390 MeV beams using 3 SC modules. By 2002 it will be upgraded (with 8 modules) up to 1 GeV: CC, Vol.37, No.7, p.4 and Vol.38, No.6, p.22; E. Colby, LINAC-98, TH2006; M.V. Yurkov, "TESLA-500 Project" on 15th RUPAC, Vol.1, p.27; TTF e^- Linac: construction of 0.4-0.6 GeV, $8mA_{avg.}$, 800μs, 10 Hz machine started in 1995; O. Hensler, 16th RUPAC, Vol.1, p.145; C-96, p.140. A. Gamp, "Recent Progress at the TTF", 17th RUPAC, Vol.1, p.16 *see too* p.184; D. Trines, EPAC-2000, FRXE01, p.58; PAC-01: M. Huning et al., "Recent Results from TTF" WOPA012 and J. Rossbach, SASE-TTF, MOAL003; P. Castro, "Performance of the TTF Linac", EPAC'02, MOPRI036, TUPRI051; LINAC-02: H. Weise, "Operational Experience with TTF", TH201; J. Rossbach, "Physics & Experiments with VUV FEL at TTF ", TH202. E-mail: *weise@desy.de*
TWAC	TeraWatt Accumulator Project at ITEP aims to produce TW power (100 kJ/100ns) intense HI beams concentrated on target. Project (began in 1997) based on existing chain: Laser Co^{25+} Ion Source, 2 MV/2.7 MHz I-3 HI injector, the UK 13Tm Booster Ring and the U-10 Tm Synchrotron. B.Yu. Sharkov, CC, Vol.38, No.4, May 1998, p.16; "Moscow Accelerator Creates First Beam", CC, Vol. 41, No.2, March 2001, p.7; N.N. Alexeev et al., Reports: on EPAC-98, p.1147, on 15th RUPAC, Vol.2, p.319, on 17th RUPAC, V.2, p.231 and p.138, on EPAC-2000, p.1283, on PAC-01, RPPH048 and on 14th HIF'02 Int. Symposium, *see too ibid.:* Reports of D. Kashinsky, V. Pershin, B. Sharkov et al.; EPAC'02: B.Yu. Sharkov et al., "Status of ITEP Powerful Ion Accelerator-Accumulator Facility TWAC", THPLE105, -104, V. Pershin et al., "Injector for ITEP-TWAC Project", -109; S. Kondrashev et al., "Laser Ion Source ...", THPRI006, *see too* 17th RUPAC, Vol.1, p.333 E-mail: *Boris.Yu.Sharkov@itep.ru*

U-10 and Heavy Ions Booster Synchrotron	10 GeV Proton Synchrotron D=80 m, constructed 1955/1961 at ITEP (Moscow), upgrade 1967, 1973, 1985, 1997. The 1st description in special issue of "Pribori i Technika Eksperimenta", No. 2, 1962; the last – N.N. Alexeev et al., "Slow Extraction System Investigation at U-10 Synchrotron", 15th RUPAC, Protvino, 1996, p.310 and AC-98, p.35. Booster Synchrotron (D=70 m) on 20 – 700 MeV for ions from He to U constructed 1985/1990 and 1997/1998 (goal). 40th anniversary of U-10: CC Vol.42, #1, 2002, p.5, AC-98, p.36.e-mail: *nalex@ vxitep.itep.ru*
U-70	76 GeV, 1.5×10^{13} p/pulse Proton Synchrotron D=472 m at IHEP (Protvino) was constructed with Linac-Injector I-100 in 1961/1967, then since 1985 injection changed on Linac I-30 and 1.5 GeV Fast Cycling Booster). AC-98, pp. 29-32; A.G. Afonin et al., 17th RUPAC, Vol.2, p.236; Yu.M. Antipov et al., "IHEP proton-ion (C^{4+}) Therapy Center", *ibid.*, p.302; E.F. Troyanov et al., "Upgrade of the Slow Extraction System", EPAC'02, MOPLE091.
UELV-8-15C1 (УЭЛВ-8-15С1)	8 MeV, 1.8 mA, 12 – 600Hz, 8 μs, 15 kW e- Linac is constructed for sterilization medical articles at Efremov Institute St. Petersburg, E.K. Gusev et al., 17th RUPAC, Vol.2, p.364.
UMER	Univ. of Maryland Electron Ring (11 m in circumference), currently under construction, has been designed to study the physics of space-charge dominated beams, P. O'Shea, PAC-01, TOAA008, RPAH045, WPAH023
UNILAC	Universal Linear Accelerator at Darmstadt of all ions from p to U^{28+} can be accelerated on a pulse-to-pulse basis on 108.4MHz to 1.4-15 MeV/u for injection in SIS. It consists of prestripper Linac (RFQ and two IH-structures, 1.4 MeV/u), a gas stripper section, a poststripper Linac (four Alvarez type DTLs, 11.4 MeV/u), and 10 single gap cavities for final energies of up to 13 MeV/u for uranium ions was constructed 1972/1975 and then upgraded; C-96, pp.133-135; *see too:* W. Barth et al., Results at upgraded UNILAC, LINAC-98, TU4027; S. Richter et al., "Recent Development and Progress in the UNILAC High Intensity Upgrade Program", EPAC'02, WEPLE118; L. Groening et al., Facility structure, beam brilliance, etc., LINAC-02, TU419–421; D. Wilms, U. Scheeler, "Operation Report of UNILAC and SIS", GSI 2002-1, April 2002, p.189. e-mail: *j.klabunde@GSI.de*
UNK	Project of Hadron SC Collider on 3 TeV (or NC on 600 GeV) with orbit length 20772 m was started in 1987. Yu. Fedotov, (IHEP), "UNK Status", EPAC-96, p.407; AC-98, p.33. In November 1998 Project was postponed due to financial reasons.
URAL-30, URAL-30M	30 MeV, 100 mA, 148.5 MHz, 5-10μs, 16,6 Hz H-type RFQ Linac – since 1983 in operation as Proton Injector for IHEP Accelerator Complex (see V.A. Teplyakov et al., EPAC-88 p.605; AC-98, p.32.), C-96, p.166; A.G. Atachkin et al., Proc. 1998 MEPhI Sci. Conf., Pt 3, p.161 and (LLRF) 17th RUPAC, Vol.1, p.275, p.341. e-mail: *zherebtsov@vx.olu.decnet.ihep.su*

UST 200 MeV e^- Linac or HIL for HLS	U. of Sci. & Tech. of China at Hefei. Y.I. Pei et al. "Status of 200 MeV e^- Linac and Its Applications". The 200 MeV, 50mA Linac since 1987 has been running well for nuclear physics experiments and for production isotopes ^{123}I, ^{11}C, ^{15}O, ^{18}F etc.; Y.I. Pei, RSI, Vol. 60, No.7, 1991, p.1701
UVSOR	M. Katoh et al., "UVSOR Upgrade Project" – improvement of 750 MeV SLS 2nd generation at IMS, Okazaki; EPAC'02, TUPRI017, THPRI047.
VEPP-2M, (-3), VEPP-2000	I.Ya. Prototopov, 15th RUPAC, Vol.1, p.35; A.A. Valischev et al., Project of BINP 2 GeV Collider VEPP-2000 at BINP (Budker Inst.), Report on 17th RUPAC, Vol.1, p.38; Yu.M. Shatunov et al., EPAC-2000, p.439.
VEPP-4M	Collider e+/e- on 5.5-6 GeV (C= 360 m) was started after reconstruction in 1990 at BINP (Novosibirsk). AC-98, p.43; V. Anachin, A. Skrinsky et al., "VEPP-4M Collider Status and Plans", EPAC-98, p.400. I.Ya. Protopopov, 15th RUPAC, Vol.1, p.35; E. Levichev et al., "Collider VEPP-4M", EPAC'02, MOPRI014-016 and TUPLE011.
VEPP-5	Project VEPP-5, V.V. Parchomchuk, 15th RUPAC, Vol.1, p.43. Its 310 MeV e^- Pre-injector Linac: K. Gubin, PAC-01, FPAH095 C-96, p.163; Control System: EPAC'02, MOPDO021; V.M. Pavlov et al.," VEPP-5 Preinjector". LINAC-02, TU401. e-mail: *logatchov@inp.nsk.su*
VISA	Visible to Infrared SASE Amplifier is FEL designed at 72 MeV ATF to obtain high gain at λ=800nm: A. Tremaine et al., PAC-01, WPPH122.
VLEPP	Proposal of 500 GeV (c.m.) Linear Collider Project, C-96, p.188-9
VLHC	Very Large Hadron Collider is BNL, LBNL and FNAL proposal study of SC p-p Collider on range scale of 10-100 TeV as next "Discovery machine". K. Hubner, "Future Accelerators", CERN-SL-98-065. PAC-01: W.A. Barletta, "VLHC – The Farthest Energy Frontier", MOPA007; J. Norem et al., "A Very Large Circular e^+e^- Collider", RPPH112.
WPT e- Linacs	A. Alimov, V.I. Shvedunov, E. A. Knapp et al., World Physics Technologies, they are building a family of 0.6-10 MeV, 50 mA CW, up to 60 kW Linacs: "High Current Industrial e^- Linacs", PAC-01, WPPH027.
WPT RCM	V.I. Shvedunov, E. A. Knapp, N.P. Sobenin et al., World Physics Technologies, "70 MeV e^- RCM Commissioning", PAC-01, WPPH063.
YerPhI Injector Linacs	1) 50-75 MeV, 2.8 GHz, 1μs, 50 Hz Linac is in operation (s.1965) as Synch. Injector; C-96, p.109. 2) 120 MeV, 2.8 GHz, 5-10μs, 50-100 Hz Linac is in construction, C-96, p.108. e-mail: *oksuzian@vx1.yerphi.am*
ZGS	Zero Gradient Synchrotron on 12.5 GeV, 3.8×10^{12} p/pulse (1.5×10^{12} p/s), D=54.7 m in 1964 began operation at ANL as world's highest energy weak-focusing Proton Synchrotron.
ZGS Linac – Injector IPNS	Proton Linac on 50 MeV, 12mA, 90μs, 30 Hz (L=33.3 m), constructed 1959/1962 at ANL. V. Stipp, "The ANL 50 MeV H^- Injector – 35 Years Anniversary", LINAC-96, p.74. Now it uses as Injector IPNS (*see here*).

TERMS

Abbreviations accepted here	APAC-98 and APAC-01 (1998 and 2001 Asian Particle Accelerator Conferences); From EPAC'92 (1992 European Particle Accelerator Conference) to EPAC'00 (e.g. EPAC-2000); From LINAC-92 (Linear Accelerator Conference 1992) to LINAC-00 (e.g. LINAC-2000); From PAC-93 (1993 Particle Accelerator Conference) to PAC-01 (e.g. PAC-2001); From 1st RUPAC (1963 Russian PAC) or 1st СУЗЧ (I Совещание по Ускорителям Заряженных Частиц 1963 г.) to 17th RUPAC (or XVII СУЗЧ'00, e.g. 2000); CC=CERN Courier.
Abbreviations *Latin* & English	1) ac – *anni currentis* – текущего года; 2) AD – *Anno Domini* – нашей эры; 3) ad – *ante diem* – before the day – до этого дня; 4) a. m. – above mentioned – вышеупомянутое; 5) au – arbitrary units, atomic unit; 6) avg. – average – среднее, в среднем; 7) BC – Before Christ - до нашей эры; 8) c, ca – *circa* – approximately, примерно; 9) c.f. – *confer* – (and cp.) - compare with, сравни; 10) ckw – clockwise – по часовой стрелке; 11) C.V. – *curriculum vitae* – жизнеописание; 12) e.c. – *exempli causa* and e.g. – *exempli gratia* – for example, например; 13) et al – *et alii* – and other people, и другие люди (*et alie* - and other things - и другие); 14) etc – *et cetera* – и так далее; 15) H.C. – *honoris causa* – почетная ученая степень за заслуги; 16) h.e. – *hic est* - то есть; 17) ibid. – *ibidem* - там же; 18) i.e. – *id est* – то есть; 19) n.a.c.s. – necessary and sufficient condition – необходимое и достаточное условие; 20) NB – *nota bene* – особое примечание; 21) p.a. (pa) – *per annum* – за год, ежегодно; 22) *per diem* – per day – в день, за день; 23) P.S. – *post scriptum* – примечание; 24) v. (and vs) – *versus* - против; 25) *via* – через; 26) *vide* – see, смотри; *vide supra* – see upper; *vide infra* – see below; 27) viz – *videlicet* – namely, именно; 28) v.v. – *vice versa* - наоборот;
AAA	Advance Accelerator Applications (project)
ABPIS	Atomic Beam Polarized Ion Source
ACID	Automated Classification and Interpretation of Data
ACOP	Accelerator Component Oriented Programming
ACS	Annual-ring Coupled Structures (с кольцевыми ячейками связи см., например, В.В. Парамонов, 15th RUPAC (СУЗЧ), 1996, Vol.1, p.161.
ADC, (cp. DAC)	Analog – Digital Conversion, (cp. Digital – Analog Conversion)
ADO	Accelerator Device Object
AD-RCNPS	Accelerator Driven - Radioactive Clean Nuclear Power System
ADS	Accelerator Driven System(s)
ADSR	Accelerator Driven Subcritical Reactor
ADSS	Accelerator Driven Subcritical System(s)
ADT	Array Display Tool
ADTT, (ADT)	Accelerator Driven Transmutation Technology
ADTW	Accelerator Driven Transmutation of Waste
ADXF	Accelerator Description exchange Format
AFE	Analog Front End
AGC	Automatic Gain Control (АРУ)

AIP	Artificial Intelligence Processor
ALC	Adaptive Logic Circuit
ALF	Advanced Lithography Facility
AMD	Adiabatic Matching Device
AMS	Accelerator Mass Spectrometry
APCS	Automatic Phase Control System
APF	Alternating Phase Focusing
API	Application Programming Interface; программный интерфейс прикладных задач; (e.g. 15th RUPAC (СУЗЧ), 1996, Vol.1, p.309).
APM	Application Programming Modules
APS	Alternating Periodic Structure (and American Physical Society)
AR	Accumulating Ring
ART	Algebraic Reconstruction Technique
ASM	Accelerator Systems Modelling
AVC	Automatic Voltage Control
AVC (AVF)	Azimuthally Varying (magnetic field) Cyclotron, (Azimuthally Varying field)
Bands of RF	See here "RF Bands" by IEEE standard (L-, S-, C-, X-, Ku-, etc)
BBA	Beam Based Alignment
BBTF	Bunched Beam Transfer Function
BBU	Beam Blow-Up, Beam Break-Up instabilities
BCM	Beam Current Monitor
BCP	Buffer Chemical Polishing
BCSID	Beam Cross-section Ionization Detector
BGIP	Beam Gas Ionization Profile Monitor
BIMS	Beam Intensity Monitoring System
BIOS	Basic Input / Output System
BLM	Beam Loss Monitor
BLVD	Bunch Length Velocity Detector (e.g., P.N. Ostroumov, LINAC-98, p.905)
BM	Bending Magnet
BNCT	Boron Neutron Capture Therapy
BPC	Binary Pulse Compression
BPF	Band-Pass Filter
BPM	Beam Position Monitor, Beam Phase Monitor
BRED	Browser and Editor – graphical interface (e.g., see J.M. Bouche 15th RUPAC (СУЗЧ), 1996, Vol.1, p.219-221).
BRIC	Breeding Ion Charge
BSM	Beam Scraping Monitor; Beam Shape Monitor; Bunch Shape Monitor
BST	Beam Switch Tube
BTF	Beam Transfer Function (measurement)
BTW	Backward Traveling Wave
CA	Cannel Access; see J.M. Bouche, 15th RUPAC (СУЗЧ), 1996, Vol.1, p.219.
CAMAC	Computer Application to Measurement and Control, cp. VME
CAS (cp. LAS)	Central Alarm System, (cp. Local Alarm System)
CBI	Coupled Bunch Instability
CCC	Cryogenic Current Comparator

CCD camera	Charge-Coupled Device (ПЗС-матрица)
CCDTL	Coupled Cavity Drift Tube Linac
CCL	Coupled Cavity Linac (Coupled Cell Linac)
CCS	Coaxial Coupled Structures (с коаксиальными ячейками связи см. В.В. Парамонов, 15th RUPAC (СУЗЧ), 1996, Vol.1, p.161)
CCU	Camera Control Unit
CDEV	Control panel DEVice
CDL	Circuit Description Language
CDM	Clock Distribution Module
CDR	Conceptual Design Report (or Review)
CDS	Cutted Disk Structures (с разрезными диафрагмами, см. В.В. Парамонов: 15th RUPAC, 1996, Vol.1, p.161; 16th RUPAC, 1998, Vol.1, p.95.
CEDAR	CERN EDMS (*see here*) for Detectors and Accelerators (CERN LHC/97-03 VAC)
CFA	Cross-Field Amplifier
CFC	Current-to-Frequency Converter
CGA	Color Graphics Adapter
CGI	Common Gateway Interface
CIC	Compact Isochronous Cyclotron
CID	Charge Injection Device – monochrome video camera
CIS	Control and Interlock System (and Cooler Injector Synchrotron at Indiana Univ.; and Collaboration of Independent States of former USSR)
CMS, cms, COM	Center-Mass-System, Center of Mass system
CMW	Controls Midleware
CNI	Coulomb Nuclear Interference
COD	Closed Orbit Distortion
COM, cms	Center of Mass system, Center-Mass-System
CORBA	Common Object Request Broker Architecture
COTR	Coherent Optical Transition Radiation
COTRI	Coherent Optical Transition Radiation Interferometer
COTS	Commercial Off-The-Shelf Software
CP	Colliding Point; CP – Combined Parity (Violation)
CPA	Chirped Pulse Amplification (see LINAC-98, Report TU4058)
CPB	Charged Particle Beam
CPI	Common Programming Interface; (or Character per Inch – число символов на дюйм)
CPL	Current Privilege Level – текущий уровень преимущественного права
CPT	Combination of charge conjugation, Parity inversion and Time reversal
CPU	Central Processing Unit
CRT	Cathode – Ray Tube
CSD	Charge State Distribution
CSM	Charge – State Multiplier system
CSR	Coherent Synchrotron Radiation
CTL	Coaxial Transmitting Line
CTP	Core Technology Plan

CTR	Coherent Transition Radiation, Controlled Thermonuclear Reactor (-tion)
CVD	Chemical Vapor Deposition technique
CW; C-W	Continuous Wave; Cockcroft-Walton HV facility
CWCD	Circular Waveguide to Coaxial Transition
DAC, ADC	Digital – Analog Conversion, Analog – Digital Conversion
DBMS	Data Base Management System
DC, (dc)	Direct current; Directional coupler; Drift tracking Chamber
DCCT	DC Current Transformer; see: ИППТ, 15th RUPAC, 1996, Vol.1, p.278.
DCPS	DC Power Supply
DCS	Distributed Control Systems; e.g., see: CERN AT/92-31 (IC), p.9
DDC	Digital Down-Converter
DDD	DOOCS Data Display program is graphical editor to create and run control panel; Displacement Damage Dose
DDE	Dynamic Data Exchange is a mechanism to simplify the transfer of small quantities of data between different applications
DDN	Design Data Needs
DDS	Direct Digital Synthesis (Synthesizer)
DEW	Directed Energy Weapons
DFE	Digital Front End
DLC	Diamond-like Carbon Structure (for generation in long wavelength range)
DLDS	Delay Line Distribution System
DLL	Dynamic Link Library
DLWG	Disk Loaded WaveGuide
DOOCS	Distributed Object Oriented Control System
DSC	Device Stub Controller; see: CERN AT/92-31 (IC); J.M. Bouche, 15th RUPAC (СУЗЧ), 1996, Vol.1, p.219-221.
DSP	Digital Signal Processor and DSP chip
DTL	Drift Tube Linac
DXRL	Deep X-ray Lithography
EBIS	Electron Beam Ion Source
EBL	Electron Beam Lithography
EBQA	Electron Beam Charge (q) State Amplifier
EBW	Electron Beam Welding
ECA	Equipment Control Assembly; see: CERN AT/92-31 (IC)
ECI	Electron Cloud Instability
ECL	Emitter-Coupled Logic
ECRIS	Electron Cyclotron Resonance Ion Source.
ECRIT	ECR Ion Trap
ECS	Energy Compression System, Electron Capture Spectroscopy
ED&D	Experiment, Design and Development
EDF	Electron Distribution Function
EDH	Electronic Document Handling
EDM	Electrical Discharge Machining, Electric Dipole Moment
EDMS	Engineering Data Management System is a collection of tools and rules to create and maintain in safety an easily accessible body of reliable information

EDR	Electronic Data Processing
EIC	Electron-Ion Collider
EM	Equipment Module
EMU	Emittance Measurement Unit
ENS	Equipment Name Server; see:15th RUPAC, 1996, Vol.1, p.p. 227, 309, 321.
EOS	Equation of State
EP	Electro-Polishing
EPA	Electron – Positron Accumulator
EPCS	Experimental Physics Control System
EPIC	Explicitly Parallel Instruction Computing technology
EPICS	Experimental and Physics Industrial Control System; e.g. see: 15th RUPAC (СУЗЧ), 1996, Vol.1, p.219-221, p.303.
EPU	Elliptically Polarizing Unulator
ERL	Energy Recovery Linac
ESM	Energy Spread & Energy Monitor
ESQ	Electrostatic Quadrupole
ESS	Electrostatic Septum; (European Spallation Source)
EUV	Extreme UltraViolet
EVP	Engineering Validation Package
FC RFQ	Folded-Coaxial RFQ
FCM	Field Control Module
FCT	Fast Current Transformer
FEA	Finite Element Analysis
FEB, (SEB)	Fast External Beam, (Slow External Beam)
FEBIAD	Forced Electron Beam Induced Arc Discharge
FEC	Front End Computer; (Managers can be served as virtual FEC)
FEL	Free Electron Laser
FEM	Free Electron Maser
FES	Front-End System (Initial part of accelerator)
FET	Field Emission Transistor
FFAG	Fixed Field Alternating Gradient (proton synchrotron)
FFC	Feedforward Control
FFT	Fast Fourier Transformation
FIFO	First-In First-Out
FIT	Finite Integration Technique
FPA	Final Power Amplifier
FPGA	Field-Programmable Gate Array
FSDM	Fast Shut Down Mode (-ule)= Crowbar, аварийный разрядник
FSM	Finite State Machine
FWHM	Full Width at Half of Maximum
GB, SB	Gas Bremsstrahlung, Single Bremsstrahlung
GCR	Galactic Cosmic Rays
GEM	Gas Electron Multiplier, CC Vol.38, № 9, Dec.1998, p.19.
GRIB	Interface chart for connection of PC IBM with other PC or another units
GTO	Gate Turn-Off switch (e.g. bipolar thyristor or trinistor)

GUI	Graphic User Interface
HEBT	High Energy Beam Transport
HEP	High Energy Program
HER, (LER)	High Energy Ring, (Low Energy Ring)
HESQ	Helical Electrostatic Quadrupole
HFSS	High Frequency Structure Simulation
HGHG	High-gain Harmonic-generation
HIDIF	Heavy Ion Driven Inertial Fusion (used elsewhere); and Heavy Ion Driven Ignition Facility (used in IAP)
HIF	Heavy Ion (Inertial Confinement) Fusion
HIF-VNL	HIF Virtual National Laboratory have formed of LBNL, LLNL and PPPL, see: C. Celata, CC Vol.42, #6, 2002, p.23
HOM	High Order Mode
HPC	High Performance Computer (-ing)
HPD	Hybrid Photodetector
HPPA	High Power Proton Accelerator
HPPL	High Power Proton Linac
HPRF	High Power RF
HTS	High-Temperature Semiconductor
HVPS	High Voltage Power Supply
HWR	Half-Wave Resonator
I&Q	In-phase and Quadrature-phase
I/O	Input / Output
I/Q, I-Q, I&Q	In Phase and/or in Quadrature (signal at 0° and/or at 90°)
IBBM	Inhomogeneous Big Bang Model of Universal
IBS	Intra-Beam Scattering
ICE	Independent Cost Evaluation
ICF	Inertial Confinement Fusion
ICR	Ion-Cyclotron Resonance
ICT	Integrating Current Transformer
ID	InterDigital structure; Insertion Device
IDE	Integrated Development Environment
IDL	Interactive Data Language
IFEL	Inverse Free Electron Laser
IGBT	Insulated Gate-Bipolar Transistors (LINAC-98, MO4077)
IGISOL	Ion Guide Isotope On Line (facility)
IGLIS	Ion Guide Laser Ion Source
IH	Interdigital H-type Structure
INS	Interoperable Naming Service
IOC	Input-Output Controller, (Integrated Optical Circuit)
IORT	Intra Operative Radiation Therapy
IOT	Inductive Output Tube (some kind of Klystrode)
IP	Intersection Point (in colliders),
IP Address	The name of client
IPM, IPMS	Ionization Profile Monitor, Ion Profile Monitor System

IR	Infra-Red; Interaction Region
IRFEL	Infra-Red Free Electron Laser
ISCL	Independent SC Cavity Linac
ISOL-type	Isotope Separator On-Line (method)
ISR RFQ	Integrated Split Ring type RFQ
ITF	Integral Transfer Function
IVA	Inductive Voltage Adders
IVP	Ion Vapor Deposition
kerma	kinetic energy released in matter
LAR	Linac-Accumulator Ring
LAS (cp. CAS)	Local Alarm System, (cp. Central Alarm System)
LCLS	Linac Coherent Light Source
LCS	Laser-Compton Scattering
LEBT	Low Energy Beam Transport
LER, (HER)	Low Energy Ring, (High Energy Ring)
LEU	Low Enriched Uranium (fuel)
LEUTL	Low Energy Undulator Test Line
LIA	Linear Induction Accelerator
LIS	Laser Ion Source
LLRF	Low Level RF system or control system
LOCO	Local Controller System
LP	Laser Photodissociation
LPSS	Long Pulse Spallation Source
LSM	Least Squares Method
LWFA	Laser Wakefield Accelerator
LWIR	Long Wavelength Infrared Radiation λ=8 -12 μm (c. SWIR)
MB RFQ	Multi-Beam RFQ
MCP	Multi Channel Plate; or Micro-channel-plate (to collect the charges)
MD	Multipactor Discharge
MDI	Multiple Document Interface; 15th RUPAC (СУЗЧ), 1996, Vol.1, p.227.
MDS	Medium Damped Structure
MDT	Mean Down Time
MEBT	Medium Energy Beam Transport
MESFET	Metal- Semiconductor Field Effect Transistor
MEVVA	Metal Vapor Vacuum Arc (type of ion source)
MITL	Magnetically Isolated Transmitting Line
MMI	Man Machine Interface
MMPS	Main Magnet Power Supply
MOSFET	Metal-Oxide Silicon Field Effect Transistor (Bipolar transistor)
MOX	Mixed plutonium-uranium Oxide
MPI	Message-Passing-Interface
MPU	Microprocessor Unit
MRI	Magnetic Resonance Imaging (e.g. CC Vol.42, #5, p.11)
MSCC	Multi-Serial Communication Controller(s)
MTBF (MTTR)	Mean Time Between Failures, (c.f. Mean Time to Repair or Replace)

MTDTL	Multi-Tank Drift Tube Linac
MTF	Modulation Transformer Function
MTF, (MTR)	Mean Time to Failures, (c.f. Mean Time to Repairs); Manufacturing and Test Folder
MTG	Master Timing Generator
MTR, (MTF)	Mean Time to Repairs, (c.f. Mean Time to Failures)
MTS	Master Timing System
MTTR, MTBF	Mean Time to Repair (or Replace), (c.f. Mean Time Between Failures)
NC, (RT)	Normal Conducting, (Room Temperature)
NCC, (RTC)	Normal Conducting Cavity, (Room Temperature Cavity)
NCO	Numerically Controlled Oscillator
NCRF cavity	Normal Conducting RF cavity
NEGs	Non-Evaporating Getters (pumps), Non-Evaporable Getters
NF	Neutrino Factory
NFPD	Neutrino Factory Proton Driver
NFS	Network File System
NGL	Next Generation Lithography
NGS	CERN Neutrino Beam to Gran Sasso
NHPP	Non-Homogenous Poisson Process
NMR	Nuclear Magnetic Resonance (effect)
NPB	Neutral Particle Beam
NPP	Nuclear Power Plant
NR	Neutron Radiography
NRF, (SRF)	Normal conducting RF cavity, copper cavity, (c.f. SC RF cavity)
NUSS	Nuclear Safety Standards
OCS	On-axis Coupled Structures (16th RUPAC, 1998, Vol.1, p.99).
ODR	Optical Diffraction Radiation
OFE	Oxygen Free Electrolytic (or Electroplating) copper
OFHC	Oxygen Free High Conductivity copper
OLE	Object Linking and Embedding
OODBS	Object Oriented Data Base System
OPI	Operator Interface
OPPIS	Optically Pumped Polarized Ion Source
OSI	Operating System Independent library
OTR	Optical Transition Radiation
OTRI	Optical Transition Radiation Interference
OTRI	Optical Transition Radiation Interferometer
PA, (pa)	Power Amplifier; (per annum – за год)
PBPM	Photon Beam Position Monitor
PBWA	Plasma Beat Wave Accelerator
PC	Pad tracking Chamber; Personal Computer
PCA	Process Control Assembly; see: CERN AT/92-31 (IC)
PCB	Printed Circuit Board (печатная плата)
PCG	Photocathode Gun
PCMMI	Process Control Man Machine Interface

PDE	Partial Differential Equation(s)
PDM	Pulse – Duration Modulation
PDP	Project Development Plan
PEI	Photoelectron Instability
PEM	Procedure Execution Manager
PERL	Photoinjected ERL (Energy Recovery Linac)
PES	Proton Elastic Scattering
PET	Positron Emission Tomography
PFM	Pulse Frequency Modulate
PFN, pfn	Pulse Forming Network
PFNA	Pulse Fast Neutron Analysis (method)
PG	Profile Grid
PID	Proportional, Integral and Differential
PIMMS	Proton-Ion Medical Machine Study
PIS	Post Interdigital Structure, В.В. Парамонов, 16th RUPAC, 1998, Vol.1, p.103
PIXE	Particle Induced X-ray Emission, Proton Induced X-ray Emission
PLC	Programmable Logic Controller; see: CERN AT/92-31 (IC)
PLL	Phase-Locked Loop
PMR	Proton Magnetic Resonance
PMT	Photo-Multiplier Tube
POP, pop	Proof of Principle
pot	Proton on Target
PP, p-p	Phase Probe, Pick-to-pick; push-pull; pick power.
ppb	Parts per billion
ppc	Proton per cycle
ppm, (PPM)	Parts per million; pulses per minute; pulse-to-pulse modulation; (Periodic Permanent Magnets – e.g. for klystrons).
ppp	Protons per pulse; peak pulse power
pps	Proton per second; pulses per second;
prr	Pulse repetition rate
PSC	Power Supply Controller
PUE	PickUp Electrode
PWFA	Plasma Wakefield Accelerator
PWM	Pulse Width Modulate
PWT	Plane-Wave-Transformer
QCC	Quartz Crystal Controlled
QCD	Quantum Chromodynamics
QED	Quantum Electrodynamics
QFT	Quantum Field Theory
QWR	Quarter Wave Resonators (Structure)
R&D	Research and Development
RAM	Random - Access Memory (задающее устройство с произвольным доступом); e.g., see 15th RUPAC (СУЗЧ), 1996, Vol.1, p.219.
RAMI	Reliability, Availability, Maintainability and Inspectability
RBS	Rutherford Backscattering (effect)

RBT	Ramped Bunch Train
RC	Remote Control
RCCS	Resonant-Control Cooling Subsystem
RCMS	Rapid Cycling Medical Synchrotron
RCNPS	Radioactive Clean Nuclear Power System
RCS	Rapid Cycling Synchrotron
RDBMS	Relational Data Base Management System
RDCB	Rectangular Directly Coupled Bridges (LINAC-98, TU4078)
RDDS	Rounded Damped Detuned Structure (LINAC -98, TU4037)
REPM	Rare Earth Permanent Magnet
RF Bands (by IEEE)	"UHF": 300 MHz–1GHz; "L-band": 1–2GHz (19.35-77.19 cm); "S-band": 2–4GHz (5.77-19.35 cm); "C-band": 4 – 8GHz; "X-band": 8–12GHz; "Ku-band": 12 – 18GHz; "K-band": 18– 27GHz; "Ka-band": 27– 40GHz; "mm-band": 40-300GHz.
RFCL	RF Crossed Lens (accelerator or section)
RFCS	RF Control System
RFD	RF Deflector
RFQ	Radio Frequency Quadrupole, (ПОКФ)
RFQD	RFQ Decelerator
RGB	Red, Green, Blue – basic colors for monitor screen
RG-BPM	Residual Gas Beam Profile Monitor
RGDTL	Ramped Gradient DTL
RGIPM	Residual Gas Ionization Profile Monitor
RIA	Rare Isotope Accelerator
RIB	Radioactive Ion Beams; or Rare Isotope Beams, e.g.: RIB Accelerators
RICH	Ring Imaging Cherenkov Counter
RLA	Recirculating Linear Accelerator
RLC	Resonant-Loop Couplers
rms (r.m.s.)	Root-mean-square
RNB	Radioactive Nuclear Beams
RO	Read-Only: мода доступа, e.g., see 15th RUPAC, 1996, Vol.1, p.219-221.
ROCOF	Rate of Occurrence Of Failures
ROCOR	Rate of Occurrence Of Repairs
RPC	Remote Procedure Calls; see: O. Hensler, 15th RUPAC, 1996, Vol.1, p.308
RRR (dc; ac)	Residual Resistance Ratio (W. Singer, 15th RUPAC, 1996, Vol.1, p.127)
RT, (NC)	Room Temperature, (Normal Conducting)
RTBT	Ring to Target Beam Transport
RTDB	Real -Time Database
RTIES	Real-Time Integrated Expert System
RTM	Racetrack Microtron
RTMR	Race-Track Microtron-Recuperator (at BINP, Novosibirsk)
RW	Read-Write: мода доступа, e.g., see 15th RUPAC, 1996, Vol.1, p.219-221.
SASE (FEL)	Self Amplified Spontaneous Emission (FEL)
SB, GB	Single Bremsstrahlung, Gas Bremsstrahlung
SCC	Side Coupled Cavity, (or SC Cavity)

SCDTL	Separated Cavity DTL
SCL	Side Coupled Linac, (or SC Linac)
SCM	Software Configuration Management system
SCR	Superconducting (or Split Coaxial) Resonator; Silicon Controlled Rectifier
SCRF cavity	Superconducting RF cavity
SCRFQ	Split Coaxial RFQ
SCS	Side Coupled Structures (see 15th RUPAC (СУЗЧ), 1996, Vol.1, p.161)
SDDS	Self Describing Data Sets
SDTL	Separated type DTL (with quadrupoles between cavities)
SEB, (FEB)	Slow External Beam, (Fast External Beam)
SEBL	Scanning Electron Beam Lithography (method)
SEC	Secondary Emission Chamber
SEDAC	E.g., see M. Clausen, 15th RUPAC (СУЗЧ), 1996, Vol.1, p.307)
SEE	Single Event Effect, Secondary Electron Emission
SEED	Secondary Emission Electron Detector
SEM	Secondary Emission Monitor, Secondary Electron Emission
SEMIG	Secondary Emission Magnetron Injection Gun
SEY	Secondary Emission Yield
SFDTL	Separated Function DTL
SHB	Sub-Harmonic Buncher
SILHI	High Intensity Light Ion Source
SIS	Spiral Interdigital Structure, В. Парамонов,16th RUPAC, 1998, Vol.1, p.103.
SLED, -2.	SLAC Linac Energy Doubler; e.g., see:15th RUPAC, 1996, Vol.1, p.92.
SLS	Synchrotron Light Source
SMLWFA	Self-Modulated Laser Wake Field Accelerator
SNAKE	SC Nanoscope for Applied Nuclear (Kern-) Physics Experiments
SOC	Separated Orbit Cyclotron
SOI	Silicon-On-Insulator
SOS	Signal Observation System
SPARC	Sun Workstation (hardware)
SPS	Super Proton Synchrotron; Surface Plasma Source
SQUID	SC Quantum Interface Device is new type of non-destructive low-intensity beam monitor.
SR	Synchrotron Radiation; Storage Ring
SRD	Step-Recovery Diode (диод с накоплением заряда)
SRF, SRFC	Superconducting RF Cavity = SCR (SC Resonator)
SRIS	Split Ring Interdigital Structure, 16th RUPAC (СУЗЧ), 1998, Vol.1, p.103
SRPLL	Switched Reference Phase Lock Loop
SRS	Synchrotron Radiation Source
SSC	Separated Sector Cyclotron
SSP	Solid State Physics
SUSY	Super Symmetry (principle)
SVX	Silicon vertex detector
SWIR	Short Wavelength Infrared Radiation (c. LWIR)
SWIRL	Switched Resonant Line

SWLS	SC Wavelength Shifter
SXR	Soft X-ray Radiation (or Soft X-Ray radiation)
T/B	Target / Blanket Assembly
TAC	Time-to-Amplitude Converter
TACO-ESRF	ESRF (European Synchrotron Radiation Facility) Control System
TBA	Two Beam Acceleration (-or)
TBT	Turn-By-Turn
TC	Thermocouple
TDP	Technical Design Report
TEC	Time Expansion tracking Chamber
TID	Total Ionizing Dose
TIT	Technological Irradiation Tool
TMC	Time Memory Cell chips
TOF, tof, t.o.f.	Time-of-Flight (method)
TOP	Therapy Oncological Protons
TORVIS	Toroidal Volume Ion Source
TPC	Total Project Cost; Time Projection Chamber
TR	Transition Radiation
TRD	Transition Radiation Detector
TRU	Transuranium Elements
TSP	Titanium Sublimation Pump
TTC	Timing, Trigger & Control system
TTF	Transit Time Factor
TW	Traveling Wave, (Tera Watt),
TWR	Traveling Wave Resonator
TWT	Traveling Wave Tube
UAL	Unified Accelerator Libraries
UHV	Ultra High Vacuum
VCH	Voltage Controlled Reactance
VCO (V.C.O.)	Voltage Controlled Oscillator
VCRs	Vane Coupling Rings (in RFQ)
VCX	Voltage Controlled Reactance
VDU	Visual Display Unite
VFEL	Volume FEL
VHS	Video Home System
VI	Virtual Instruments; O. Hensler, 15th RUPAC (СУЗЧ), 1996, Vol.1, p.310.
VME	Versa bus Memory Extended or Versa Module European, cf. CAMAC
VPM	VLEPP Pulse Multiplier (see LINAC-98, Report TH2001; see too V.E. Balakin (В.Е. Балакин), 15th RUPAC (СУЗЧ), 1996, Vol.1, p.92.
VSOP, V.S.O.P.	Very Superior Old Pale (very good liquid)
VSWR	Voltage Standing Wave Ratio
VUV	Very far (or Vacuum) in range λ from 10 to 200nm Ultra-Violet.
VUV/SXR	VUV/Soft X-Ray
VXIbus	module
WBS	Work Breakdown Structure

WC	Water-cooled
WDM	Wavelength Division Multiplexing device
WFD	Waveform Digidizer
WG	Waveguide - волновод, or Wire Gauge -сортамент проводов
XADS	eXperimental Accelerator Driven System
XDR	eXternal Data Representation; e.g., see 15th RUPAC, Vol.1, p. 308.
XES	X-ray Emission Spectroscopy
XHV	eXtreme High Vacuum
XRD	X-ray Diffraction
Xtal, xtl	Crystal, quartz (or quartz generator)
XUV	eXtreme Ultraviolet
XUV FEL	X-ray Ultraviolet FEL

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