



national accelerator laboratory

TM-398
2800

A LISTING OF THE RESEARCH PROPOSALS SUBMITTED TO NAL
INCLUDING THE CURRENT STATUS OF THE PROPOSED
AND APPROVED EXPERIMENTS

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National Accelerator Laboratory

November 1, 1972



- 1A Neutrino - D. Cline; Harvard, Penn., Wisc.
 NAL NEUTRINO PROPOSAL.
 Approved 10-70.
- 2B 30" Hybrid - G. A. Smith; ANL, Duke, Iowa State, Md., Mich.
 State, NAL, Notre Dame, Purdue, Toronto (Canada);
 Wisc.
 STUDY OF MULTIPARTICLE p-p INTERACTIONS FROM 100 GeV/c TO
 400 GeV/c WITH A 30-INCH BUBBLE CHAMBER--OPTICAL SPARK CHAMBER
 HYBRID SYSTEM.
 Approved 5-71. 100K pix of p-p @ 200 GeV
 100K pix of p-p @ 300 or 400 GeV
 120K pix of π^- -p @ 200 GeV
 50K pix of π^- -p @ 100 GeV
 80K pix of π^+ -p @ 100 GeV
- 3 Monopole - R. Ross; LBL, SLAC
 PROPOSAL FOR A SEARCH FOR MAGNETIC MONOPOLES AT NAL.
 Approved 8-70.
- 4-I Neutron Cross Section - M. Longo; ANL, Mich.
 NEUTRON-PROTON DIFFRACTION SCATTERING AND NEUTRON TOTAL CROSS
 SECTIONS UP TO 200 GeV.
 Approved 8-70.
- 4-II Neutron Elastic Scattering - M. Longo; ANL, Mich.
 NEUTRON-PROTON DIFFRACTION SCATTERING AND NEUTRON TOTAL CROSS
 SECTIONS UP TO 200 GeV.
 Approved 8-70.
- 5 Muon - M. Perl; SLAC
 MUON-PROTON INELASTIC SCATTERING.
 Withdrawn 10-70.
- 6 Proton-Proton Elastic - A. Krisch; ANL, Mich.
 200-GeV PROTON-PROTON ELASTIC SCATTERING AT HIGH TRANSVERSE
 MOMENTUM.
 Approved 2-71.

- 7 Elastic Scattering - D. Meyer; ANL, Ind., Mich., NAL, Purdue
A PROPOSAL TO MEASURE π^{\pm} p AND p-p DIFFERENTIAL ELASTIC SCATTER-
ING CROSS SECTIONS FROM 50 TO 170 GeV/c. (In addition, data
will be taken on K^{\pm} -p and \bar{p} -p simultaneously.)
 Approved 8-70.
- 8 Neutral Hyperon - L. Pondrom; Mich., Rutgers, Wisc.
EXPERIMENTS IN A NEUTRAL HYPERON BEAM.
 Approved 8-70.
- 9B 15' Neutrino - M. Stevenson; Hawaii, LBL
PROPOSAL TO STUDY NEUTRINO INTERACTIONS IN THE 30-m³ NAL BUBBLE
CHAMBER WITH EXTERNAL MUON IDENTIFIER.
 Defer 12-71. 2,000K pix of ν -d with EMI.
- 10 Total Cross Section - W. Baker; NAL
A PROPOSAL TO MEASURE TOTAL CROSS SECTIONS FOR π^{\pm} , K^{\pm} , p, \bar{p} .
 Inactive 9-70 (see 104).
- 11A Quark - Y. Kim; Ind. State, Kansas, NAL, Ohio State, Rose
Polytechnic
SEARCH FOR FAST PARTICLES PRODUCED AT LARGE LAB ANGLES AT NAL.
(Search for tachyons, quarks.)
 Rejected 9-70.
- 12 Neutron Backward Scattering - N. Reay; Carleton (Canada);
Mich. State, Ohio State
A STUDY OF NEUTRON-PROTON CHARGE-EXCHANGE SCATTERING IN THE
MOMENTUM RANGE 50-200 GeV/c.
 Approved 8-70.
- 13 Detector Development - T. Bowen; Ariz., LSU, Max-Planck
(Germany); NASA
IONIZATION SPECTROMETER DEVELOPMENT AND CALIBRATION.
 Inactive 12-70.
- 14A Proton-Proton Inelastic - P. Franzini; Columbia, SUNY (Stony
Brook)
PROPOSAL TO STUDY INELASTIC HIGH-ENERGY PROTON-PROTON COLLI-
SIONS IN THE DIFFRACTIVE REGION.
 Approved 3-71.

- 15A K⁰ Regeneration - J. Steinberger; Calif. (Santa Cruz); CERN, Chicago, Columbia, Heidelberg (Germany)
PROPOSAL FOR A MEASUREMENT OF THE MOMENTUM DEPENDENCE OF THE DIFFERENCE IN FORWARD SCATTERING AMPLITUDES OF K AND \bar{K} .
Rejected 8-70.
- 16A Proton-Proton Inelastic - L. T. Kerth; LBL
p-p ELASTIC AND INELASTIC SCATTERING AT SMALL MOMENTUM TRANSFER.
Rejected 4-71.
- 17 30" Antiprotons - B. Reynolds; Ohio.
 $\bar{p}d$ INTERACTIONS FROM 20 TO 60 GeV/c.
Active. 1,000K pix of $\bar{p}d$ at 20-60 GeV.
- 18A Proton Excitation - G. O'Neill; Pavia (Italy); Princeton
PROPOSAL TO STUDY THE REACTIONS $pp \rightarrow p(n\pi^+)$, $p(p\pi^0)$ AND $p(p\pi^+\pi^-)$ at 200 GeV.
Defer 8-71.
- 19A Monopole - D. Tompkins; Wyoming
A SEARCH FOR MONOPOLE PRODUCTION BY 200-500 GeV PROTONS.
Defer 7-72.
- 20 15' Neutrino - M. Block; Northwestern
A STUDY OF ELASTIC NEUTRINO SCATTERING USING A DEUTERIUM BUBBLE CHAMBER.
Rejected 12-71. 250K pix of ν -d.
- 21A Neutrino - B. Barish; Cal. Tech., NAL
NEUTRINO PHYSICS AT VERY HIGH ENERGIES.
Approved 10-70.
- 22 Monopole - G. Collins; BNL, VPI
EXPERIMENTAL PROPOSAL TO THE NAL FOR A SEARCH FOR MULTIGAMMA EVENTS FROM MAGNETIC MONOPOLE PAIRS.
Approved 8-70.
- 23A Inclusive Scattering - J. Rothberg; Wash.
INCLUSIVE πp AND Kp SCATTERING.
Approved 7-72.
- 24A Photon Scattering - D. Caldwell; Calif. (Santa Barbara); NAL
MEASUREMENT OF INELASTIC COMPTON SCATTERING.
Inactive 10-72.

- 25A Photon Cross Section - D. Caldwell; Calif. (Berkeley)
MEASUREMENT OF THE TOTAL PHOTOABSORPTION CROSS SECTION ON
H, D, C, Cu, AND Pb FOR PHOTON ENERGIES FROM 14 TO 300 GeV,
AND A SEARCH FOR THE PHOTOPRODUCED MONOPOLE.
Approved 8-71.
- 26 Muon - K. W. Chen; Calif. (San Diego); Cornell, Mich. State
HIGH MOMENTUM TRANSFER INELASTIC MUON SCATTERING AND TEST OF
SCALE INVARIANCE AT NAL.
Approved 8-70.
- 27A Neutron Dissociation - J. Rosen; NAL, Northwestern, Rochester
PROPOSAL TO STUDY THE COHERENT DISSOCIATION OF NEUTRONS.
Approved 3-71.
- 28A 15' Neutrino - W. Fry; CERN, Wisc.
SEARCH FOR HEAVY LEPTONS AND HARD PENETRATING RADIATION IN THE
NEUTRINO BEAM, STUDY OF DIFFRACTION SCATTERING OF NEUTRINOS;
STUDY OF DEEP INELASTIC ν_{μ} SCATTERING IN A Ne BUBBLE CHAMBER
AT NAL, AND TEST OF THE $\Delta S = \Delta Q$ RULE AT HIGH MOMENTUM TRANSFER
USING INCLUSIVE REACTIONS.
Approved 12-71. 50K pix of ν 's in neon ($\geq 30\%$) yielding at
least 10K events and 50K pix of ν 's using
special targeting.
- 29 Muon - R. Wilson; Harvard
PROPOSAL FOR μP SCATTERING EXPERIMENT AT NAL.
Inactive 10-70 (see 98).
- 30 K⁰ Regeneration - T. Kirk; Harvard, NAL
NEUTRAL KAON REGENERATION IN LIQUID HYDROGEN FROM 40 GeV TO
200 GeV.
Rejected 9-70.
- 31A 15' Neutrino - M. Derrick; ANL, Carnegie-Mellon
PROPOSAL TO INVESTIGATE $\bar{\nu}_{\mu}$ INTERACTIONS IN HYDROGEN AT NAL.
Approved 12-71. 7,000 events in not more than 200K pix
of $\bar{\nu}$ in H₂.
- 32 TANC - R. Hofstadter; Stanford
TEST AND CALIBRATE A LARGE NaI (T1) TANC DETECTOR AND TO
MEASURE NEUTRAL HADRON TOTAL CROSS SECTIONS.
Approved 8-70.

- 33 Muon - L. Mo; Chicago, NAL, Oxford (England); Penn.
PRELIMINARY PROPOSAL TO MEASURE THE HADRONS IN MUON-PROTON
INELASTIC SCATTERING AT THE NATIONAL ACCELERATOR LABORATORY.
Inactive 11-70 (see 98).
- 34 Detector Development - R. Huggett; LSU, Max-Planck (Germany);
NASA
NUCLEAR-ELECTROMAGNETIC CASCADE DEVELOPMENT STUDY. (Ioniza-
tion spectrometer development.)
Approved 8-70.
- 35A Multiparticle - D. McLeod; Ill. (Chicago Circle)
A PROPOSAL TO STUDY RESONANCE PRODUCTION IN $\pi^-p \rightarrow X^-p$ AT 40 TO
80 GeV/c.
Inactive 10-70.
- 36A Proton-Proton Elastic - R. L. Cool; Dubna (USSR); Rochester,
Rockefeller, NAL
A PROPOSAL TO STUDY SMALL ANGLE p-p SCATTERING AT VERY HIGH
ENERGIES.
Approved 2-71.
- 37 15' Proton - E. Malamud; Calif. (Los Angeles); NAL
MULTIBODY FINAL STATES IN pp COLLISIONS UP TO 500 GeV.
Active. 250K pix of p-p at several energies in 15'.
- 37A 30" Proton - E. Malamud; Calif. (Los Angeles); NAL
MULTIBODY FINAL STATES IN pp COLLISIONS UP TO 500 GeV.
Approved 8-71. 50K pix of p-p @ 300 GeV.
- 38 Neutrino - J. Walker; ANL, MIT, NAL, Northwestern, Pittsburgh
PRODUCTION OF W's AND STUDY OF DEEP INELASTIC REACTIONS BY
VERY HIGH ENERGY NEUTRINOS.
Rejected 11-70.
- 39 Rapid Cycling Chamber - W. Walker; Duke, Toronto (Canada);
Wisc.
PROPOSAL FOR THE USE OF A RAPID CYCLING BUBBLE CHAMBER AT
NAL. (Diffraction dissociation by 100, 200 GeV/c protons,
pions; missing mass, new particle searches.)
Withdrawn 5-71.
- 40 15' Pion - R. Willmann; Purdue
DIFFRACTIVE PROCESSES IN π^-p INTERACTIONS AT 100 GeV/c.
Active (see 126). 500K pix of π^-p at 100 GeV.

- 41 15' Proton - V. Barnes; Purdue
VERY HIGH ENERGY PROTON PROTON INTERACTIONS: EXPLORATORY
SURVEY IN A BUBBLE CHAMBER.
Active (see 126). 100K pix of p-p in 15'.
- 42 15' Neutrino - A. Garfinkel; Purdue
NEUTRINO INTERACTIONS IN THE DEUTERIUM-NEON 14-FOOT DOUBLE
BUBBLE CHAMBER.
Defer 12-71. 1,000K pix in D₂ TST surrounded by neon.
- 43 Diffraction Scattering - D. Miller; Purdue
PROPOSAL TO STUDY SINGLE MESON PRODUCTION IN MESON NUCLEON
INTERACTIONS AT 50 TO 100 GeV/c.
Inactive 10-70.
- 44A 15' Neutrino - B. Roe; Mich., NAL
PROPOSAL TO STUDY NEUTRINO INTERACTIONS WITH PROTONS AND
NEUTRONS USING THE 14-FOOT BUBBLE CHAMBER AT NAL.
Defer 12-71. 750K pix in D₂ TST surrounded by neon.
- 45A 15' Neutrino - F. Nezirick; Mich., NAL
PROPOSAL TO STUDY NEUTRINO INTERACTIONS WITH PROTONS USING
THE 14-FOOT BUBBLE CHAMBER AT NAL.
Approved 12-71. Up to 15,000 events in not more than
300K pix of ν in H₂.
- 46 15' Pion - F. Huson; NAL
A STUDY OF HIGH ENERGY π^- PROTON INTERACTIONS WITH THE NAL
14-FOOT BUBBLE CHAMBER.
Active. 250K pix of π^- -p in H₂ TST surrounded by neon.
- 47 30" Hybrid - I. Pless; MIT
DIFFRACTION DISSOCIATION AND ELASTIC SCATTERING PROCESSES
WITH INCIDENT PROTONS AND NEGATIVE PIONS IN THE 200 GeV/c
REGION.
Withdrawn 5-71 (see 154). 1,000K expansions of a hybrid
bubble chamber system.
- 48 Muon Search - R. Adair; BNL, NAL, Yale
A MEASUREMENT OF THE INTENSITY AND POLARIZATION OF MUONS
PRODUCED DIRECTLY BY THE INTERACTIONS OF PROTONS WITH NUCLEI.
Approved 12-70.

- 49 Form Factor - J. Poirier; NAL, Notre Dame
THE ELECTROMAGNETIC FORM FACTOR OF THE CHARGED PION FROM
 π^+e^- ELASTIC SCATTERING.
Defer 8-71.
- 50A Elastic Scattering - J. Orear; BNL, Cornell, Lebedev Physical
Institute (USSR)
LARGE ANGLE π^\pm -p, K^\pm -p, AND p^\pm -p ELASTIC SCATTERING AT HIGH
ENERGIES.
Defer 8-71.
- 51 Multiparticle - E. von Goeler; Northeastern, Stanford
MASS SPECTRUM DECAY MODES FOR BOSONS IN THE 2.0 TO 8.6 GeV/c²
MASS RANGE.
Approved 3-72.
- 52B Particle Production - H. Weisberg; Penn.
A PROPOSAL TO STUDY PARTICLE PRODUCTION SPECTRA AND MULTI-
PLICITIES IN HIGH ENERGY HADRON-HADRON COLLISIONS, AND FOR A
BEAM SURVEY AND QUARK SEARCH.
Defer 8-71.
- 53A 15' Neutrino - C. Baltay; BNL, Columbia
SEARCH FOR THE INTERMEDIATE BOSON, LEPTON PAIR PRODUCTION,
AND A STUDY OF DEEPLY INELASTIC REACTIONS UTILIZING HIGH
ENERGY NEUTRINO INTERACTIONS IN LIQUID NEON.
Approved 12-71. 100K pix of ν in neon or plates yielding
at least 20,000 events.
- 54 Multiparticle - J. Pine; Cal. Tech., Calif. (Los Angeles)
QUASI-TWO-BODY REACTIONS AT 50-200 GeV.
Inactive 10-70 (see 110B).
- 55 Pion Charge Exchange - A. Tollestrup; Cal. Tech.
PROPOSAL TO STUDY $\pi^-p \rightarrow \pi^0n$ AND $\pi^-p \rightarrow \eta n$ AT HIGH ENERGY.
Inactive 12-70.
- 56 Total Cross Section - R. Cool; BNL, Rockefeller
MEASUREMENT OF TOTAL CROSS SECTIONS ON HYDROGEN AND DEUTERIUM.
Inactive 9-70 (see 104).
- 57 Total Cross Section - S. Lindenbaum; BNL, NAL, Yale
BEHAVIOR OF HIGH ENERGY ELASTIC SCATTERING AND TOTAL CROSS
SECTIONS FOR π^\pm -p, K^\pm -p, p-p, AND \bar{p} -p.
Rejected 3-71.

- 58 15' Hadron - R. Panvini; BNL, Vanderbilt, Wisc.
PROPOSAL TO STUDY MULTIPARTICLE PRODUCTION WITH NAL BUBBLE
CHAMBER.
Active. 1,400K pix of π , K, p into H_2 in 15'.
- 59A Proton Dissociation - L. Holloway; Ill.
A PROPOSAL TO STUDY THE REACTION $\pi^- p \rightarrow \pi^- \pi^+ n$.
Defer 8-71.
- 60 K^0 Regeneration - A. Wattenberg; Ill.
VERY HIGH ENERGY K^0_L EXPERIMENTS AT NAL.
Rejected 8-70.
- 61 Polarized Scattering - O. Chamberlain; ANL, Harvard, LBL,
NAL, N.M., Wyo., Yale
A PROPOSAL TO MEASURE POLARIZATION IN pp , $\pi^- p$, AND $\pi^+ p$ ELASTIC
SCATTERING AT 50, 100 AND 150 GeV/c AT THE NATIONAL ACCELERATOR
LAB.
Approved 8-70.
- 62 30" Hadron - J. VanderVelde; Mich.
STUDY OF MULTIPARTICLE PRODUCTION IN A SMALL BUBBLE CHAMBER.
Inactive 5-71 (see 138-II). 200K pix of π^- and P in H_2 at
100 and 200 GeV.
- 63A Particle Production - J. Walker; NAL, Northeastern, Princeton
SURVEY OF PARTICLE PRODUCTION IN PROTON COLLISIONS AT NAL.
Approved 12-70.
- 64 Proton-Proton Scattering - A. L. Read; ANL, Bari (Italy);
Brown, CERN, Cornell, MIT, NAL
HADRON SPECTRA FROM HIGH ENERGY PROTON-PROTON INTERACTIONS.
Inactive 10-70 (see 96).
- 65 15' Kaon - K-W Lai; BNL, Fla. State, Vanderbilt
KP AND $\bar{K}P$ INTERACTIONS FROM ~20-60 GeV/c IN A LARGE LIQUID
HYDROGEN BUBBLE CHAMBER.
Active. 1,000K pix of K^0_L -P with plates in 15' chamber.

- 66 30" Hybrid - J. VanderVelde; Mich.
STUDY OF LOW-MASS PERIPHERAL STATES IN A SMALL TRIGGERED
BUBBLE CHAMBER. (A second round experiment with a downstream
focusing spectrometer using scintillation counters.)
Inactive 8-71. 200K expansions of π -p at >100 GeV.
- 67A Proton-Proton Inelastic - B. Maglic; Ill. (Chicago Circle);
Imperial College (London); Rutgers,
Upsala
SEARCH FOR BARYON RESONANCES UP TO 10 GeV MASS PRODUCED IN
 $p + p \rightarrow p + \text{MM}$ WITH A RESOLUTION OF ± 25 MeV.
Approved 2-71.
- 68 Multiparticle - H. Anderson; Chicago
MULTIPARTICLE PRODUCTION IN π -p COLLISIONS AT 100 GeV.
Inactive 11-70.
- 69A Elastic Scattering - W. Willis; NAL, Yale
ELASTIC SCATTERING OF THE LONG-LIVED HADRONS.
Approved 9-70.
- 70 Lepton - L. Lederman; Columbia, NAL
STUDY OF LEPTON PAIRS FROM PROTON-NUCLEAR INTERACTIONS;
SEARCH FOR INTERMEDIATE BOSONS AND LEE-WICK STRUCTURE.
Approved 12-70.
- 71B Form Factor - D. Drickey; Calif. (Los Angeles); JINR (USSR)
A MEASUREMENT OF THE PION FORM FACTOR.
Defer 8-71.
- 72 Quark - L. Leipuner; BNL, Yale
EXPERIMENTAL PROPOSAL TO NAL QUARK SEARCH.
Approved 8-70.
- 73A Elastic Scattering - R. Anderson; Northeastern, SLAC
PROPOSAL TO MEASURE TWO BODY ELASTIC AND QUASI-ELASTIC SCATTER-
ING AT HIGH ENERGIES.
Inactive 10-70 (see 96).
- 74 Monopole - R. Fleischer; General Electric, NAL
PROPOSAL TO NATIONAL ACCELERATOR LABORATORY FOR A SEARCH FOR
MAGNETIC MONOPOLES.
Approved 9-70.

- 75 Quark - T. Yamanouchi; NAL, NYU
A PROPOSAL TO SEARCH FOR FRACTIONALLY CHARGED QUARKS.
Approved 9-70.
- 76 Monopole - R. Carrigan; NAL
SEARCH FOR MAGNETIC MONOPOLES PRODUCED AT NAL.
Approved 9-70.
- 77 15' Hyperon - L. Libby; Colo.
PROPOSAL TO STUDY HIGH ENERGY HYPERON PHYSICS AT NAL. (Protons
onto plates in chamber to produce hyperons.)
Inactive 7-71. 250K pix of protons into hydrogen with
plates.
- 78A 30" Hadron - R. Burnstein; IIT
PROPOSAL TO STUDY MULTIPARTICLE π^+ -p AND p-p INTERACTIONS
FROM 70 GeV/c AND ABOVE UTILIZING THE 30-INCH BUBBLE CHAMBER
AND ASSOCIATED EQUIPMENT AT NAL.
Inactive 8-71. 240K pix of π^+ -p and p-p at ≥ 70 GeV.
- 79 K^0 Regeneration - H. Ticho; Calif. (Los Angeles)
A MEASUREMENT OF THE REGENERATION PARAMETER IN THE 100 GeV/c
RANGE.
Rejected 8-70.
- 80A 30" Pion - T. Ferbel; Rochester
PROPOSAL TO STUDY MULTIPARTICLE-PRODUCTION PROCESSES UTILIZING
THE 30-INCH BUBBLE CHAMBER.
Inactive 5-71 (see 138-I). 80K pix of π^- -p at 70 and
 ≥ 250 GeV/c.
- 81A Nuclear Chemistry - M. W. Weisfield; ANL, BNL, Carnegie-Mellon,
Chicago, LASL, Purdue, SUNY (Buffalo)
PRELIMINARY SURVEY OF 200 GeV PROTON INTERACTIONS WITH COMPLEX
NUCLEI.
Approved 8-70.
- 82 K^0 Regeneration - V. Telegdi; Calif. (San Diego); Chicago,
NAL, SLAC
PROPOSAL TO INVESTIGATE REGENERATION OF NEUTRAL K-MESONS AT
VERY HIGH ENERGIES.
Approved 8-70.
- 83 15' Antiproton - T. Kitagaki; Tohoku (Japan)
STUDY OF THE ANTIPROTON INTERACTIONS IN THE NAL HYDROGEN
BUBBLE CHAMBER AT VERY HIGH ENERGIES, 40-140 GeV.
Active. 200K of \bar{p} -p in 15' at 40, 70, 140 GeV.

- 84 Pion Charge Exchange - T. Jenkins; Case Western Reserve
PROPOSAL FOR AN EXPERIMENT TO STUDY THE REACTION $\pi^-p \rightarrow \pi^0n$ AT
30 TO 150 GeV AT NAL.
Inactive 12-70.
- 85 15' Pion - L. Gutay; Purdue
PROPOSAL FOR AN EXPOSURE OF THE 15-FOOT DEUTERIUM FILLED BUBBLE
CHAMBER TO A BEAM OF SEPARATED π^+ MESONS AT 40 GeV/c AT NAL.
Active. 600K pix of separated π^+ -d at 40 GeV.
- 86A Diffraction Dissociation - H. Lubatti; Orsay (France); Wash.
A PROPOSAL TO STUDY INELASTIC DIFFRACTIVE PROCESSES BY OBSERV-
ING COHERENT PRODUCTION OF MULTI-PION FINAL STATES FROM He
NUCLEI.
Approved 5-71.
- 87A Photoproduction - W. Lee; Columbia, Cornell, Hawaii, Ill., NAL
PROPOSAL TO SEARCH FOR HEAVY LEPTONS AND INTERMEDIATE BOSONS
FROM PHOTON-NUCLEON AND PHOTON-NUCLEI COLLISIONS.
Approved 8-71.
- 88 30" Quark - V. Hagopian; Fla. State
NAL BUBBLE CHAMBER PROPOSAL SEARCH FOR FRACTIONALLY CHARGED
PARTICLES.
Rejected 8-71. 20K pix in negative and positive "beam".
- 89 15' Pion - W. Fretter; Calif. (Berkeley)
INTERACTIONS OF 150 GeV π^- MESONS IN A LARGE NAL BUBBLE
CHAMBER FILLED WITH H_2 -Ne.
Active. 250K pix of π^- in H_2 -Ne mixture.
- 90 Emulsion - J. Gierula; Cracow (Poland)
CRACOW NUCLEAR EMULSION EXPOSURES.
Completed 9-72.
- 91 Emulsion - C-Y Chien; Johns Hopkins, NAL
PROPOSAL FOR AN EMULSION EXPERIMENT TO MEASURE THE ENERGY
DEPENDENCE OF TOTAL CROSS SECTIONS AND MULTIPLICITIES UP TO
500 GeV/c.
Withdrawn 7-71.
- 92A 15' Neutrino - F. Sciulli; Cal. Tech.
A NEUTRINO EXPERIMENT IN THE NAL 30m³ BUBBLE CHAMBER USING
"MONOENERGETIC" NEUTRINOS.
Rejected 12-71. 750K with $\nu, \bar{\nu}$ in H_2, D_2 and Ne.

- 93 Pion Charge Exchange - M. Wahlig; LBL
SMALL-ANGLE CHARGE EXCHANGE REACTIONS $\pi^- + p \rightarrow \pi^0 + n$ AND
 $\pi^- + p \rightarrow \eta + n$ FROM 50 TO 200 GeV/c.
Inactive 12-70 (see 111).
- 94 Emulsion - E. Goza; LSU
100 GeV PION INTERACTIONS IN PHOTOGRAPHIC EMULSION. (A
PARASITIC EXPERIMENT.)
Withdrawn 10-72.
- 95A Photon Search - B. Cox; Johns Hopkins, NAL
PROPOSAL FOR EXAMINATION OF WIDE ANGLE GAMMA RAYS AT NAL.
Approved 6-71.
- 96 Elastic Scattering - D. Ritson; ANL, Bari (Italy); Brown,
CERN, Cornell, MIT, NAL, Northeastern,
Stanford
FOCUSING SPECTROMETER FACILITY. (Measure elastic scattering
and Quasi two-body elastic scattering of K^\pm , p^\pm on H_2 and D_2
up to 200 GeV/c.
Approved 12-70.
- 97 Charged Hyperon - J. Lach; NAL, Yale
ELASTIC SCATTERING OF THE HYPERONS. (Small angle scattering
of negative hyperons Σ^- , Ξ^- , Ω^- .)
Approved 9-71.
- 98 Muon - L. Mo; Chicago, Harvard, NAL, Oxford (England)
MUON-PROTON INELASTIC SCATTERING EXPERIMENT AT THE NATIONAL
ACCELERATOR LABORATORY.
Approved 1-71.
- 99 Associated Production - R. Diebold; ANL, Cornell, NAL
A STUDY OF $\pi^+ p \rightarrow K^+ \Sigma^+$ AND $\pi^+ p \rightarrow K^+ Y^*$ USING THE FOCUSING SPEC-
TROMETER FACILITY.
Active.
- 100 Particle Search - P. Piroue; Chicago, Princeton
A PROPOSAL TO STUDY PARTICLE PRODUCTION AT HIGH TRANSVERSE
MOMENTA.
Approved 2-71.
- 101 Form Factor - B. Gittelman; ANL, Cornell, NAL
ELASTIC $\pi^+ e^-$ SCATTERING. (Using Single Arm Spectrometer.)
Defer 8-71.

- 102 K Charge Exchange - T. Jenkins; Case Western Reserve
PROPOSAL FOR AN EXPERIMENT TO STUDY THE REACTION $K^-p \rightarrow \bar{K}^0n$
AT NAL ENERGIES.
 Inactive 4-71 (see 135).
- 103 Emulsion - D. King; Tenn.
INTRA-NUCLEAR CASCADE PRODUCED BY 200 GeV PROTONS.
 Completed 9-72.
- 104 Total Cross Section - W. Baker; BNL, NAL, Rockefeller
MEASUREMENT OF TOTAL CROSS SECTIONS ON HYDROGEN AND DEUTERIUM.
 Approved 8-70.
- 105 Emulsion - P. Malhotra; Tata Inst. (India)
A PROPOSAL TO STUDY SOME CHARACTERISTICS OF PROTON-NUCLEON
AND PROTON-NUCLEUS COLLISIONS AT 400 GeV USING NUCLEAR
EMULSIONS.
 Completed 9-72.
- 106 Multiparticle - D. Miller; ANL, Mich. State, Northwestern
PROPOSAL FOR A STUDY OF MULTIPARTICLE PRODUCTION AT NAL
USING AN ARRAY OF WIDE-GAP TRIGGERABLE SPARK CHAMBERS.
 Rejected 5-71.
- 107A Elastic Scattering - K-W Lai; BNL, Purdue
MEASUREMENTS OF ELASTIC AND QUASI-ELASTIC SCATTERINGS OF pp
AND $\bar{p}p$ FROM ~20 TO 40 GeV/c.
 Rejected 8-71.
- 108 Beam Dump - M. Awschalom; NAL
A BEAM DUMP EXPERIMENT. (Study of shielding including hadron
cascade development, muon attenuation, radioactivity.)
 Approved 3-71.
- 109 Beam Survey - K. Pretzl; NAL
A PROPOSAL FOR A PRELIMINARY BEAM SURVEY IN THE 3.5 MRAD BEAM.
 Inactive 3-71.
- 110B Multiparticle - J. Pine; Cal. Tech., Calif. (Los Angeles);
 Ill. (Chicago Circle); NAL
PROPOSAL TO STUDY MULTIPARTICLE PERIPHERAL PHYSICS AT NAL.
 Approved 4-72.
- 111 Pion Charge Exchange - A. Tollestrup; Cal. Tech., LBL, NAL
PROPOSAL TO STUDY $\pi^-p \rightarrow \pi^0n$ AND $\pi^-p \rightarrow \eta n$.
 Approved 2-71.

- 112 Neutron Dissociation - M. Kriesler; Mich., Princeton
NEUTRON DIFFRACTION DISSOCIATION IN COULOMB DISSOCIATION
FROM VARIOUS NUCLEI.
 Rejected 8-71.
- 113 K Charge Exchange - D. H. Miller; Northwestern
PROPOSAL TO STUDY THE K^{\pm} CHARGE EXCHANGE REACTIONS AT HIGH
ENERGIES.
 Inactive 4-71 (see 135).
- 114 Emulsion - P. L. Jain; SUNY (Buffalo)
INTERACTION OF 200-500 GeV PROTON WITH EMULSION NUCLEI.
Completed 9-72.
- 115 Short-Lived Particles - M. L. Stevenson; LBL
SEARCH FOR LONG-LIVED PARTICLES ($\tau \geq 0.1$ m sec).
 Approved 8-71.
- 116 Emulsion - J. Hebert; Barcelona (Spain); McGill (Canada);
 NAL, Ottawa (Canada); Strasbourg (France);
 Toronto (Canada)
INTERACTION OF HIGH ENERGY PROTONS IN NUCLEAR EMULSIONS
LOADED WITH B^{10} AND LiF.
 Completed 9-72.
- 117A Emulsion - O. Kusomoto; Hiroshima, INS Tokyo, Kinki, Osaka
 City (Japan)
PHENOMENOLOGICAL STUDY OF 200 AND 500 GeV/c PROTON-PROTON
COLLISIONS IN EMULSION.
 Completed 9-72.
- 118 Inclusive Scattering - J. I. Friedman; Bari (Italy); Brown,
 MIT, NAL
HADRON SPECTRA FROM HIGH ENERGY INTERACTIONS. (Using Single
Arm Spectrometer)
 Active.
- 119 Super-Heavy Elements - C. J. Batty; ANL, Hebrew (Israel);
 Manchester (England); RHEL
PRODUCTION OF HEAVY AND SUPER-HEAVY NUCLEI IN TARGETS IRRADIATED
BY VERY HIGH ENERGY PROTONS.
 Defer 8-71.
- 120 Photon Search - D. Cline; Chicago, Harvard, Wisc.
EARLY π^0 PARTICLE PRODUCTION SURVEY WITH THE GAS JET TARGET.
 Approved 6-71.

- 121A 30" Pion - R. Lander; Calif. (Davis)
A PROPOSAL TO SEARCH FOR VERY HEAVY STRANGE PARTICLES USING
A SMALL HYDROGEN BUBBLE CHAMBER.
Approved 8-71. About 50K pix of π^+p at 100 GeV in 30".
- 122A 15' Neutrino - A. A. Volkov; Inst. High Energy Physics (USSR)
ON INVESTIGATION OF NEUTRINO INTERACTION WITH THE 15-FOOT
BUBBLE CHAMBER AT NAL.
Inactive 9-72 (see 180). 3,000K pix of $\bar{\nu}$, $\bar{\nu}$ in H_2 , D_2 and Ne.
- 123 Quark - U. S. Kim; Ind. State, Ohio State, Rose Hulman Inst.
PROPOSAL FOR A SEARCH FOR QUARK-MATTER AT NAL.
Inactive 11-72.
- 124 Emulsion - H. H. Aly; Southern Ill.
THE NATURE OF THE MOMENTUM SPECTRUM OF THE SECONDARY PARTICLES
FROM HIGH-ENERGY COLLISION.
Inactive 12-71.
- 125 30" Pion - D.R.O. Morrison; CERN
PROPOSAL TO STUDY π^-p REACTIONS AT 60 AND 200 GeV/c IN THE
30-INCH HYDROGEN BUBBLE CHAMBER AT NAL.
Approved 8-71. 50K pix of π^-p at 100 GeV.
- 126 30" Hybrid - V. E. Barnes; Purdue
MULTIPARTICLE π^-p INTERACTIONS AT 130 GeV/c AND AT THE
HIGHEST ENERGY.
Withdrawn 4-72. 400K pix of π^-p at 130 and 300 GeV with
hybrid 30".
- 127 30" Hadron - B. Eisenstein; Ill.
A PROPOSAL TO STUDY SLOW SECONDARY PARTICLE DISTRIBUTIONS IN
 π^-p AND pp REACTIONS IN THE 30-INCH BUBBLE CHAMBER.
Withdrawn 3-72. 200K pix of π^- and p at 50, 150 and 300 GeV.
- 128 30" Proton - A. Benvenntti; Wisc.
SEARCH FOR MOSSBAUER TYPE NUCLEAR COLLISION WITH HIGH ENERGY
PROTONS.
Defer 8-71. 60K pix of P-N at 400 GeV.
- 129B 30" Neutral - W. F. Fry; Wisc.
AN INVESTIGATION OF THE COMPONENTS OF THE NEUTRAL BEAM PRO-
DUCED BY HIGH ENERGY PROTONS AT NAL USING THE 30" BUBBLE
CHAMBER.
Defer 7-72. 20K pix of neutral beam on H_2 .

- 130 30" Proton - R. Panvini; Vanderbilt
PROPOSAL TO STUDY pp INTERACTIONS UP TO 500 GeV/c WITH THE
30" BUBBLE CHAMBER.
Rejected 8-71. 200K pix at 120 and 500 GeV.
- 131 30" Hybrid - D. H. Miller; Purdue
K⁻p AND \bar{p} p INTERACTIONS AT 200 GeV/c.
Inactive 4-72. 200K pix of K⁻p and \bar{p} p @ 200 GeV using
Hybrid 2B System.
- 132 30" Hybrid - I. A. Pless; Brown, IIT, Ill., Ind., Johns
Hopkins, MIT, NAL, Notre Dame, Rutgers, Stevens,
Yale
A GENERAL SURVEY OF PION-PROTON AND PROTON-PROTON COLLISIONS
IN THE 100-500 GeV/c REGION.
Inactive 6-71 (see 154). 2,000K pix of π^{\pm} , p on H₂ at 100,
200 and 300 GeV.
- 133 30" Hybrid - W. D. Shephard; Notre Dame
STUDY OF MULTIPIION PRODUCTION IN HIGH ENERGY π^- p INTERACTIONS
AT NAL USING THE 30-INCH HYDROGEN BUBBLE CHAMBER AND A WIDE-
GAP SPARK CHAMBER SPECTROMETER.
Withdrawn 8-72 (see 2B). 300K pix of π^- -p @ 300 GeV using
Hybrid 2B System.
- 134 30" Pion - V. P. Kenney; Notre Dame
STUDY OF MULTIPIION PRODUCTION IN HIGH ENERGY π^- p INTERACTIONS
AT NAL.
Withdrawn 8-72 (see 2B). 400K pix of π^- -p at 50, 150 and
300 GeV/c.
- 135 K Charge Exchange - T. Jenkins; Case Western Reserve, Mass.,
Northwestern
PROPOSAL FOR AN EXPERIMENT TO STUDY THE REACTION $K^-p \rightarrow \bar{K}^0n$
AT NAL ENERGIES.
Defer 11-71.
- 136 30" Hybrid - W. D. Walker; Duke, Toronto (Canada); Wisc.
A STUDY OF HIGH ENERGY π^- NUCLEON COLLISIONS.
Withdrawn 3-72 (see 2B). 600K pix of π^{\pm} p and π^+ d at 200 GeV.
- 137 30" Pion - F. R. Huson; Calif. (Berkeley); LBL, NAL
STUDY OF π^-+p INTERACTIONS AT HIGH ENERGY.
Approved 8-71. 50K pix of π^- p at 200 GeV.
- 138-I 30" Proton - T. Ferbel; Mich., Rochester
STUDY OF MULTIPARTICLE PRODUCTION IN A 30-INCH BUBBLE CHAMBER.
Approved 8-71. 50K pix of p-p at 100 GeV.

- 138-II 30" Proton - J. VanderVelde; Mich., Rochester
STUDY OF MULTIPARTICLE PRODUCTION IN A 30-INCH BUBBLE CHAMBER.
Approved 8-71. 50K pix of p-p at 400 GeV.
- 139 Form Factor - E. Engels; Pittsburgh
A MEASUREMENT OF THE ELECTROMAGNETIC RADIUS OF THE KAON AND
THE DIFFERENCE BETWEEN THE PION AND KAON RADII.
Defer 8-71.
- 140 Missing Mass - D. Garelick; Northeastern
PROPOSAL TO STUDY HIGH MASS STATUS OF π^\pm , K^\pm , p^\pm , WITH MASSES
UP TO 10 GeV.
Rejected 11-71.
- 141A 30" Proton - T. H. Fields; ANL, NAL
STUDY OF pp INTERACTIONS IN THE ANL 30-INCH HYDROGEN BUBBLE
CHAMBER AT NAL.
Approved 8-71. 67K pix of p-p at 200 GeV.
- 142 Super-Heavy Elements - R. W. Stoughton; ORNL
PROPOSAL FOR A SEARCH FOR SUPER-HEAVY ELEMENTS BY IRRADIATIONS
AT NAL.
Defer 8-71.
- 143 30" Pion - G. Kalbfleisch; BNL
PROPOSAL FOR A RAPID SYSTEMATIC STUDY OF ALL INTERACTIONS IN
A π^-p EXPOSURE OF THE BARE 30-INCH CHAMBER AT 120 GeV/c.
Approved 8-71. 50K pix of π^-p at 300 GeV.
- 144A Photon Production - S. Ting; Carleton (Canada); McGill (Canada);
MIT, Minn., NAL
PROPOSAL TO SET UP A TAGGED PHOTON FACILITY AND TO SURVEY
INDUCED REACTIONS IN 50-300 BeV REGION.
Defer 7-72.
- 145 15' Photon - J. K. Walker; NAL
A PROPOSAL TO STUDY PHOTON-PROTON INTERACTIONS BETWEEN 20 AND
250 GeV.
Defer 8-71. 250 K of γ -p in 30" and 15'.
- 146 Plastic Detectors - J. Hebert; Barcelona (Spain); Frankfurt
(Germany); Miss. State, Montreal (Canada);
Ottawa (Canada); Strasbourg (France)
A STUDY OF PROTON-NUCLEI INTERACTIONS AT ENERGIES HIGHER THAN
100 GeV WITH VISUAL SOLID DETECTORS.
Defer 8-71.

- 156 Emulsion - K. Niu; Tokyo (Japan)
STUDY OF SECONDARY PARTICLES PRODUCED BY 200 AND 500 GeV
PROTONS IN EMULSION CHAMBERS.
Completed 9-72.
- 157 30" Hybrid - A. R. Dzierba; Cal. Tech., LBL
A PROPOSAL TO STUDY HIGH ENERGY DIFFRACTIVE N* PRODUCTION.
(30-inch chamber with a magnetic spectrometer.)
Defer 7-72. 4,500K expansions of π^-p at 50 GeV.
- 158 30" Proton - R. Sosnowski; Warsaw (Poland)
PROPOSAL TO STUDY HIGH ENERGY COLLISIONS IN THE 30-INCH
HYDROGEN BUBBLE CHAMBER.
Rejected 7-72. 50K pix of p-p at 100 GeV.
- 159 30" Proton - P. K. Malhotra; Tata Inst. (India)
STUDY OF GENERAL FEATURES OF PARTICLE PRODUCTION IN p-p
COLLISIONS AT 400 AND 100 GeV.
Rejected 7-72. 100K of p-p at 100 and 400 GeV.
- 160 K⁰ Decay - U. Nauenberg; Colo.
PROPOSAL TO SEARCH FOR THE DECAY MODE $K_S \rightarrow \mu^+ \mu^-$.
Defer 7-72.
- 161 30" Proton - W. F. Fry; Wisc.
PROPOSAL TO SURVEY HIGH ENERGY PROTON COLLISIONS IN NEON AND
TO SEARCH FOR ANOMALOUS PHOTON BUNDLES AT NAL.
Defer 7-72. 50K pix of p in neon at high energy.
- 162 K⁰ Decay - L. G. Pondrom; Wisc.
NOTE ON $K_S \rightarrow \mu^+ \mu^-$ SEARCH IN THE NEUTRON HYPERON BEAM.
Defer 7-72.
- 163 30" Hybrid - W. D. Walker; Duke, N.C.
PROPOSAL FOR A STUDY OF THE INTERACTION OF HIGH ENERGY π^-
WITH NEON.
Defer 7-72. 50K pix of π^- - neon using Hybrid 2B System.
- 164-I Multi-Gamma - Z.G.T. Guiragossian; Houston, Rice, Stanford
MULTI-GAMMA-RAY FINAL STATES USING A NEGATIVE BEAM ON HYDROGEN,
Cu AND Pb TARGETS.
Active.

- 173 30" Proton - J. C. VanderVelde; Mich.
PROTON-DEUTERON INTERACTIONS IN THE 30-INCH BUBBLE CHAMBER.
Active. 100K pix of p-d at 100 and 200 GeV.
- 174 Electroproduction - S.C.C. Ting; Carleton (Canada); MIT, Minn.,
NAL, Toronto (Canada)
PROPOSAL TO STUDY ELECTROPRODUCTION WITH COINCIDENCE TECHNIQUES
AT HIGH ENERGIES.
Defer 7-72.
- 175 Photoproduction - S.C.C. Ting; Carleton (Canada); McGill
(Canada); MIT, Minn.
STAGE I TO PROPOSAL #144. A SIMPLE SPECTROMETER TO MEASURE
PHOTOPRODUCTION OF VECTOR MESONS AND PIONS AT HIGH ENERGY.
Rejected 7-72.
- 176 Diffraction Scattering - O. Piccioni; Calif. (San Diego)
PROPOSAL FOR AN EXPERIMENT AT THE NATIONAL ACCELERATOR LAB-
ORATORY NUCLEAR LEVELS AS ANALYZERS OF HIGH ENERGY INTERACTIONS.
Defer 7-72.
- 177A Proton-Proton Elastic - J. Orear; Cornell, Lebedev Physical
Inst. (USSR); McGill (Canada); North-
eastern
EARLY MEASUREMENT OF 200 AND 400 GeV pp LARGE ANGLE ELASTIC
SCATTERING.
Active.
- 178 Multiplicities - W. Busza; MIT
A STUDY OF THE AVERAGE MULTIPLICITY AND MULTIPLICITY DISTRIBU-
TIONS IN HADRON-NUCLEUS COLLISIONS AT HIGH ENERGIES.
Defer 7-72.
- 179 30" Kaon - A. R. Erwin; Wisc.
 K^+p MULTIPARTICLE PRODUCTION IN THE 30-INCH NAL HYBRID CHAMBER
AT THE HIGHEST POSSIBLE ENERGY.
Defer 7-72. 300K pix of K^+p at >200 GeV using Hybrid
2B System.
- 180 15' Neutrino - A. I. Mukhin; Mich., Moscow (USSR); NAL,
Serpukhov (USSR)
A STUDY OF ANTINEUTRINO INTERACTIONS IN THE NAL 15-FOOT BUBBLE
CHAMBER, FILLED WITH HYDROGEN AND NEON.
Approved 7-72. 50K pix of $\bar{\nu}$ on H_2 /neon.

- 181 Emulsion - A. S. Cary; Harvey Mudd College
THE DIRECT PRODUCTION OF ELECTRON PAIRS IN NUCLEAR EMULSION
BY 100 AND 200 GeV PROTONS.
Active.
- 182 30" Proton - G. Gidal; Calif. (Davis); LBL
A 30-INCH BUBBLE CHAMBER PROPOSAL.
Active. 15K pix of p-p at 400 GeV.
- 183 Emulsion - M. I. Tretyakova; Lebedev Physical Inst. (USSR)
A PROPOSAL OF THE PHOTOEMULSION EXPERIMENT AT THE NATIONAL
ACCELERATOR LABORATORY (BATAVIA).
Completed 9-72.
- 184 Particle Search - A. K. Mann; Chicago, Harvard, Penn., Wisc.
SEARCH FOR A NEW CLASS OF PENETRATING MASSIVE PARTICLES AT C-O.
Approved 10-72.
- 185 30" Proton - A. Fridman; Saclay (France); Strasbourg (France)
PROPOSAL TO STUDY pn INTERACTIONS AT 205 GeV/c BY MEANS OF THE
30-INCH DEUTERIUM FILLED BUBBLE CHAMBER.
Active. 50K pix of p-d at 205 GeV.
- 186 Proton-Deuteron Elastic - A. C. Melissinos; NAL, Rochester,
Rockefeller, State Committee (USSR)
A PROPOSAL TO STUDY SMALL ANGLE PROTON-DEUTERON SCATTERING.
Active.
- 187 Particle Search - L. Lederman; Columbia, Harvard, NAL
PHASE 0.8 SEARCH FOR LONG-LIVED MASSIVE OBJECTS.
Approved 10-72.
- 188 Proton Inclusive - F. Sannes, I. Siotis; Imperial College
(England); Rutgers
A PROPOSAL TO MEASURE CROSS SECTIONS FOR $pp \rightarrow pX$, nX AS A
FUNCTION OF S AND M_x^2 USING THE INTERNAL TARGET FACILITY AT NAL.
Active.
- 189 Emulsion - D. M. Ritson; Stanford
NUCLEAR EMULSION EXPOSURES TO 400 GeV.
Approved 10-72.