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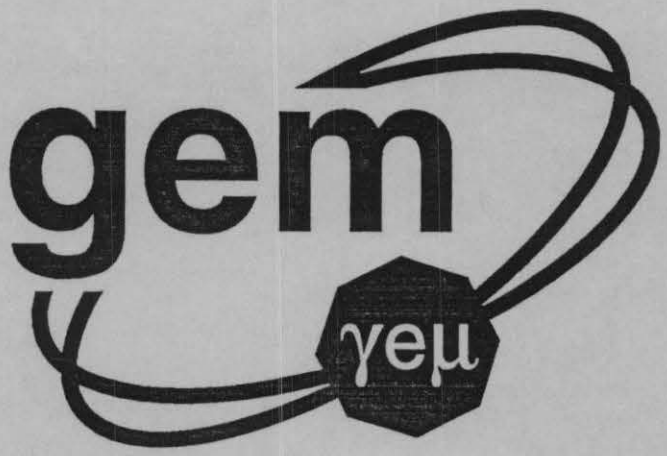


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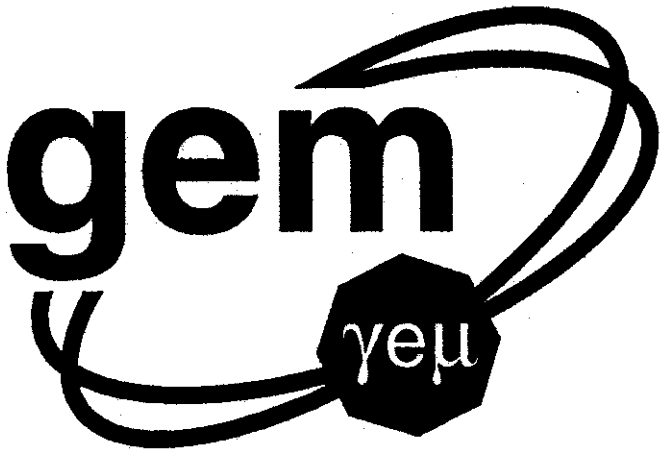


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| **Zhang, J. Q.** | Radiation Damage of Rare Earth Ions Doped Barium Fluoride Crystals | 03/01/92 | TN-92-00078 |
| **Zhao, Y. L.** | Radiation Damage in Large Barium Fluoride Crystals | 03/01/92 | TN-92-00077 |
| **Zhou, Bing** | Basic Information Relating to Use of PDT's: Specification for Wire/Wall a-Concentricity | 03/01/92 | TN-92-00073 |
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| **Zhou, Bing** | $Ho \rightarrow ZZ^* \rightarrow \lambda+\lambda-\ \lambda+\lambda-$ : Search for 140 < MHo < 180 GeV | 05/01/92 | TN-92-00103 |
| **Zhou, Bing** | Measurements of HRS Wire Tensions 12 Years After Construction | 03/01/92 | TN-92-00075 |
| **Zhou, Bing** | Momentum Resolution Criteria for the Central Tracker | 05/01/92 | TN-92-00100 |
| **Zhou, Bing** | Study of Hadron Punchthrough and Muon Rates at the SSCYuan-Hann Chang | 05/01/92 | TN-92-00101 |
| **Zhou, Bing** | Wire Positioning Accuracy Based on Knowledge of Wire Tension | 03/01/92 | TN-92-00074 |
| **Zhu, Ren-yuan** | On Quality Requirements to the Barium Fluoride Crystals | 01/03/92 | TN-92-00048 |
| **Zhu, Ren-yuan** | On Quality Requirements to the Barium Fluoride Crystals | 02/01/92 | TN-92-00048 Rev. A |

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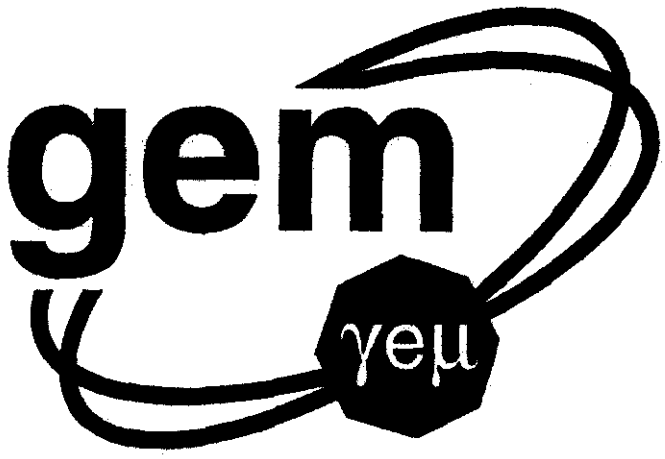
| **Zhu, Ren-yuan** | Signal and Background of H->Gamma Gamma with Proposed GEM Calorimeter Systems | 11/30/91 | TN-91-00032 |
| **Zhukov, V.** | The Mylar Straw Tubes: Test Results and Applications to Muon Tracking | 05/28/92 | TN-92-00105 |

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| **Considerations on the Addition of Detector Planes Outside the GEM Magnet and on the Implementation of a Vertex Constraint** | Rosenson, Larry | 04/09/92 | TN-92-00097 |
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| **Drift Gas Studies for GEM Muon System** | Ahlen, S.<br>Marin, A.<br>Zhou, B. | 03/01/92 | TN-92-00072 |
| **Eddy Currents in Shells of Liquid Argon Cryostat During Protective Discharge of the GEM Magnet** | Martovetsky, N. | 04/09/92 | GDT-000019 |
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| **Forward Calorimeter Transition, Z Position and Segmentation** | Forden, G. E. | | TN-91-00028 |
| **Fringe Field Dipole-Dipole Force Interaction** | Pillsbury, Jr., R. D. | 11/05/91 | TN-91-00035 |
| **GEFUR Meeting** | | 10/18/91 | GCT-000002 |
| **GEM Baseline 1 Specification** | Barish, Barry<br>Harris, Mike<br>Marx, Mike<br>Sanders, Gary H.<br>Willis, William | 04/07/92 | TN-92-00076 DRAFT |
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| **GEM Cost Estimating Plan (LOI)** | Sawicki, Richard | 09/30/91 | TN-91-00017 |
| **GEM Detector Cost and Design Study for Scintillating Hadron Calorimeters** | Claffey, C. L.<br>Eberle, C. C.<br>Rennich, M. J.<br>Singhal, M. K. | 09/22/91 | TN-91-00020 |
| **GEM Detector For the SSC: U.S. - Republic of Korea Working Group Meeting** | Gary Sanders | 04/14/92 | TN-92-00089 |
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| **GEM Forward Calorimeter Design Meeting** | Forden, G. E.<br>Rutherfoord, J. P.<br>Shaver, L.<br>Shupe, M. | 11/18/91 | TN-91-00046 |
| **GEM Letter of Intent (LOI)** | GEM Collaboration | 11/30/91 | TN-92-00049 |
| **GEM Magnet Acquisition Plan** | GEM Project Department | 05/08/92 | IN-92-00009 |
| **GEM Magnet Options: Preliminary Report** | Becker, H.<br>Diatchenko, N.<br>Marston, P.G.<br>Pillsbury, Jr., R.D.<br>Sullivan, J. D.<br>Thome, R.J. | 11/25/91 | TN-91-00037 |
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| **GEM Magnet Technical Panel Meeting** | | 09/04/91 | GDT-000003 |
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| **GEM Technical Panel Meeting** | Jarvis, P.<br>Stefanski, R. | 10/10/91 | GDT-000008 |
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| **H → μμμμ and H → μμεε Acceptance** | Paige, Frank E. | 03/06/92 | PN-92-00005 |
| **Ho → ZZ* → λ+λ− λ+λ− : Search for 140 < MHo < 180 GeV** | Zhou, B. | 05/01/92 | TN-92-00103 |

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| **IEEE Standard 754 and You: What the GEM Computer User Needs to Know About IEEE Floating-Point Arithmetic** | Roberts, Lee A. | 05/28/92 | TN-92-00104 |
| **Independent Cost Estimate of Spaghetti Hadron Calorimeter** | Ayer, F.<br>Elder, C.<br>Sullivan, D.<br>Womble, E. | 09/05/91 | TN-91-00007 |
| **Integration Meeting** | | 10/15/91 | GDT-000005 |
| **Intermediate Mass Higgs → WW Decay** | Yamamoto, Hiroaki | 12/05/91 | TN-92-00079 |
| **Ion Loading in Liquid Ionization Calorimeters** | Rutherfoord, John P. | | TN-91-00027 |
| **Jazelle Data Manager for GEM, The** | Johnson, A.S. | 03/31/92 | TN-92-00081 |
| **Jet Contributions to $E_T$ Cross Sections** | Paige, Frank E. | 10/07/91 | PN-91-00001 |
| **Jet-Energy Measurements with a Noncompensating Calorimeter System** | Paar, H. P.<br>Wigmans, R. | 02/20/92 | TN-92-00067 |
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| **Liquid Argon Calorimeter Cost Review Meeting - SSCL** | | 04/22/92 | IN-92-00003 Rev. A |
| **Liquid Krypton Parallel Plate Electromagnetic Calorimeter Design Cost Review** | Oak Ridge National Laboratory<br>University of Washington | 04/22/92 | IN-92-00008 |
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| **Measurements of HRS Wire Tensions 12 Years After Construction** | Ahlen, S.<br>Marin, A.<br>Zhou, B. | 03/01/92 | TN-92-00075 |
| **Missing ET Signature for Gluino Production in the GEM Detector for the SSC** | Kahn, Stephen A. | 10/24/91 | TN-92-00051 |
| **Momentum Resolution Criteria for the Central Tracker** | Zhou, B. | 05/01/92 | TN-92-00100 |
| **Monte Carlo Studies of the Texas Test Rig Performance** | Vanyashin, A.<br>Yost, G. | 05/18/92 | TN-92-00099 |
| **Muon Drift Chamber Physics and Engineering R&D Activities for the L* and GEM Detectors in FY 1991** | Ables, E.<br>Bionta, R.M.<br>Britt, H.C.<br>Capell, M.<br>Chargin, A.K.<br>Deis, G.A.<br>Fackler, O.D.<br>et. al. | 09/25/92 | TN-92-00093 |
| **Muon Energy Loss in GEM BaF2/Scintillating Fiber Calorimeter** | McNeil, R. | 03/10/92 | TN-92-00069 |
| **Muon Engineering Status Meeting - M.I.T.** | | 05/20/92 | TN-92-00106 |
| **Muon Engineering Status Meeting - M.I.T.** | | 05/27/92 | TN-92-00107 |

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| **Occupancy and Pileup in the GEM Detector** | | 12/12/91 | TN-91-00041 |
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| **On Quality Requirements to the Barium Fluoride Crystals** | Zhu, Ren-yuan | 02/01/92 | TN-92-00048 Rev. A |
| **Physics Motivation for an Improved Tracker for GEM** | Thomas, Jennifer<br>Wang, Ed | 02/19/92 | TN-92-00065 |
| **Possible H → W+W- Signal for 2mW < mH < 2mZ** | Paige, Frank E. | 10/07/91 | PN-91-00003 |
| **Preformance of Straw Tubes Made by Ultrasoncially Welding Two Layers of Aluminized Mylar Producing 8 Parallel Tube 1 cm in Diameter** | Muzzin, V.<br>Shukov, V. | | TN-91-00024 |
| **Previous Analysis of Tracks Data in Solenoid** | Yatsunenko, Yu. A. | 02/01/92 | TN-92-00066 |
| **Progress Report: Neutron Flux in the GEM Detector** | Lee, David M.<br>Prael, R. E.<br>Waters, Laurie | 04/04/92 | TN-92-00091 |
| **Progress Report on Design and Simulation Studies for a Tungsten and Liquid Argon Forward Calorimeter for the GEM SSC Detector** | Rutherfoord, John P.<br>Shupe, Michael A. | 10/25/91 | TN-92-00052 |

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| **Radiation Damage of Rare Earth Ions Doped Barium Fluoride Crystals** | Chen, G.<br>Man, S. Q.<br>Ren, S. X.<br>Xiao, H.<br>Zhang, J. Q. | 03/01/92 | TN-92-00078 |
| **Report of the Third and Final Meeting of the GEM Magnet Technical Panel** | | 10/10/91 | GDT-000016 |
| **Scintillating Fiber Hadron Calorimeter Design Cost Review** | Boston University<br>C.S. Draper Laboratory<br>Oak Ridge National Laboratory | 04/22/92 | IN-92-00005 |
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| **Shielding of the Magnetic Fields from the GEM Magnet** | Myatt, L.<br>Pillsbury, Jr., R.D.<br>Sullivan, J. D. | 11/07/91 | TN-91-00036 |
| **Showershape and Preradiator Study for Higgs $\rightarrow \gamma + \gamma$ Background** | Yamamoto, Hiroaki | 03/28/92 | TN-91-00033 |
| **Signal and Background of H->Gamma Gamma with Proposed GEM Calorimeter Systems** | Zhu, Ren-yuan | 11/30/91 | TN-91-00032 |
| **Simulation Studies of Liquid Argon and Liquid Ekypton Electronmagnetic Calorimeter Plate Designs for the GEM SSC Detector** | Shupe, Michael A. | | TN-91-00026 |
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| **Subsystem Integration Meeting Minutes** | | 10/24/91 | GDT-000007 |
| **Summary of the GEM Cost Estimate Status** | | 12/15/91 | IN-91-00002 |
| **Supplemental Environmental Analysis of the GEM Magnet** | Woolley, Ronn | 05/13/92 | IN-92-00010 |
| **The GEM Central Tracker: A Progress Report** | Baltay, Charles | 02/01/92 | TN-92-00063 |
| **The Mylar Straw Tubes: Test Results and Applications to Muon Tracking** | Chirikov-Zorin, I.<br>Gapienko, V.<br>Khasins, D.<br>Larichev, A.<br>Puchov, O.<br>Zajz, V.<br>Zhukov, V. | 05/28/92 | TN-92-00105 |
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| **Users Requirements Document Perparation Memorandum** | Harris, Mike | 02/14/92 | GGT-000002 |

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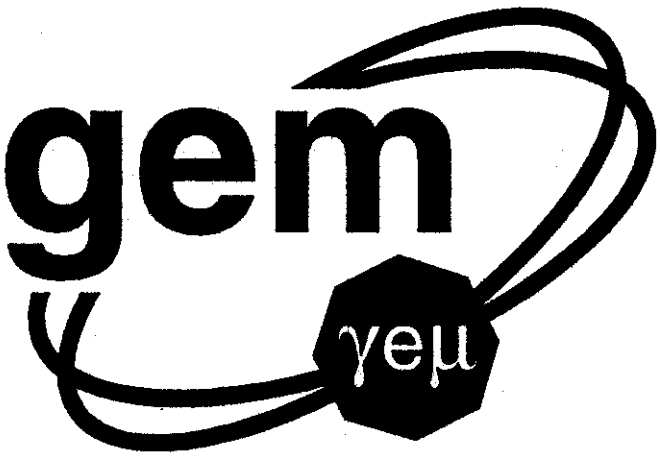
| **Workshop on Vibrational Control and Dynamic Alignment Issues at the SSC** | Eberle, Cliff<br>Johnson, Coleman | 02/11/92 | TN-92-00064 |

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GCT-000001 11/06/91

**GEM Experimental Facilities User Requirements (GEFUR) Document**

Detector Engineering Resources Department/Physics Research Division

Superseded by GCT-000001 Rev. A

GCT-000001 REV. A 04/01/92

**GEM Experimental Facilities User Requirements (GEFUR) Document**

Detector Engineering Resources Department/Physics Research Division

GCT-000001 REV. B 05/15/92

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Detector Engineering Resources Department/Physics Research Division

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GDT-000006 10/23/91

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GDT-000007 10/24/91

**Subsystem Integration Meeting Minutes**

GDT-000008 10/10/91

**GEM Technical Panel Meeting**

Jarvis, P.

ACTUAL DATES -- 10/10/91 - 10/11/91

GDT-000009

**This number was not used.**

GDT-000010

**This number was not used.**

GDT-000011

**This number was not used.**

GDT-000012 11/08/91

**GEM Muon Meeting**

This document number was changed to TN-92-00050.

GDT-000013 11/20/91

**GEM Engineering/Integration Meeting SSCL**

Actual Dates: 11/20/91 - 11/21/91

GDT-000014 01/20/92

**GEM Engineering/Integration Meeting - SSCL**

Transparencies and minutes of the GEM Engineering/Integration Meeting held at the SSCL on January 20 and 21, 1992.

Actual Dates: 01/20/92-01/21/92

GDT-000015 03/09/92

**GEM DETECTOR: Proposal for a Design Baseline**

This document proposes changes to the GEM detector proposed in the LOI. These changes could become the basis for a new baseline. Also addressed are cost impacts of changes to the LOI and a list of major issues to be resolved at or following the Tuscon meeting.
Following the GEM Collaboration meeting in Tuscon, this document will be expanded to contain the controlled baseline configuration.

GDT-000016 10/10/91

**Report of the Third and Final Meeting of the GEM Magnet Technical Panel**

This is the third and final meeting of the GEM Magnet Technical Panel that studied issues related to the technical credibility of the GEM solenoidal magnet concept, the cost estimate, proposed schedule, and operational issues.

GDT-000017 02/18/92

**GEM Engineering/Integration Meeting - SSCL**

Agenda, transparencies and attenders of the GEM Integration/Engineering Meeting held at the SSCL on February 18 and 19, 1992. The following agenda items were covered: GEM User Requirements Document and Facilities Update; System Parameters and Data Base; Schedule for Next Cost Estimate Book, Detector Baseline Update and Preparation for Tuscon; and Future Work and Fund Distribution.

GDT-000018 03/25/92

**Engineering/Integration Meeting - SSCL**

Agenda, transparencies and attenders of the GEM Integration/Engineering Meeting held at the SSCL on March 25, 1992. The following agenda items were covered: Baseline 1 Closeout Discussions; Magnet Design Progress; Muon Design Progress; Calorimeter Design Progress; Tracker Design Progress; Schedule Update; GEFUR Progress; Latest Surface Facilities Internal Layouts; and Other Business.

GDT-000019 04/09/92

**Eddy Currents in Shells of Liquid Argon Cryostat During Protective Discharge of the GEM Magnet**

Martovetsky, N.

This memo contains results of estimation of effects regarding the eddy currents, induced in concentric shell structures in GEM detector during protective discharge, particularly in shells of vacuum vessel and cryostat with liquid Ar in hadron calorimeter. This memo gives rough evaluation of the forces, generated in shell structures carrying eddy currents and discusses heat generation in those structures during protective discharge.

Memorandum

GDT-000020 04/27/92

***Engineering/Integration Meeting - SSCL***

Agenda, attenders, minutes, and transparencies of the GEM Engineering/Integration Meeting held at the SSCL on April 27 and 28, 1992. Agenda items: General Information; Surface Facilities Update; Magnet Assembly Sequence and Facility Impact; Muon Assembly Facility; Calorimeter Assembly Sequence; Underground Facility; Schedules; Tracker Update; Calorimeter Schedule Considerations; Explained the Current GEMAG Schedule; and Water Cooling Considerations.

Actual dates April 27 & 28, 1992.

GGT-000001 02/03/92

**GEM Vacuum System**

Chapman, Gerry

GEM Vacuum System.

GGT-000002 02/14/92

**Users Requirements Document Perparation Memorandum**

Harris, Mike

Memorandum confirming intentions to produce the GEM Users Requirements Document by March 3, 1992.

GGT-000003 02/15/88

**Final Safety Analysis Report: Seismic Design, Commanche Peak Steam Electric Station**

Texas Utilities Generating Company

This is the seismic design section extracted from the larger final safety analysis report for the Commanche Peak nuclear generating station located near the Superconducting Super Collider. Presented are nomograms for horizontal and vertical ground motion for a range of seismic activity parameters. These data were used for structural design of the nuclear generating station.

IN-91-00001 12/12/91

**GEM Magnet Subsystem LOI Conceptual Design Cost Estimates**

Bowes, Joel

Requires GEM Project Manager approval for distribution.

IN-91-00002 12/15/91

**Summary of the GEM Cost Estimate Status**

Requires GEM Project Manager approval for distribution.

IN-92-00003 04/22/92

**Liquid Argon Calorimeter Cost Review Meeting - SSCL**

Transparencies of the presentations at the April 22, 1992 Liquid Argon Calorimeter Cost Review Meeting. Agenda items were: Resolution vs. Angle, Thickness; Status of Engineering; Cost Estimate; R&D Issues; Foreign Contribution Models; Preradiator; and Separate EM, EM+Forward.

This Document Number was changed from GEM TN-92-00090. Requires GEM Project Manager approval for distribution

IN-92-00003 Rev. A 04/22/92

**Liquid Argon Calorimeter Cost Review Meeting - SSCL**

Transparencies of the presentations at the April 22, 1992 Liquid Argon Calorimeter Cost Review Meeting. Agenda items were: Resolution vs. Angle, Thickness; Status of Engineering; Cost Estimate; R&D Issues; Foreign Contribution Models; Preradiator; and Separate EM, EM+Forward.

This Document Number was changed from GEM TN-92-00090. Requires GEM Project Manager approval for distribution

IN-92-00004 04/23/92

**Electronics Cost Review**

Agenda, attenders and presentations of the GEM Electronics Cost Review Meeting held at the SSC Laboratory on April 23, 1992. Agenda items included: Review of Costing Method; Costs by Subsystem; Discussion of IPC Costs; Discussion of CSC Costs; Level 2 & DAQ Costs; Plans for DAQ Design Work; Si Vtx Electronics Costs; Per-channel Cost Summaries & Discussion; and Plan for the Future.

Requires GEM Project Manager approval for distribution.

IN-92-00005 04/22/92

**Scintillating Fiber Hadron Calorimeter Design Cost Review**

Boston University

Presentations of the GEM Scintillating Fiber Hadron Calorimeter Design Cost Review. Presented at the GEM Calorimeter Cost Review Meeting held at the SSC Laboratory on April 22, 1992.

Requires GEM Project Manager approval for distribution.

IN-92-00006 04/22/92

**Barium Fluoride Electromagnetic Calorimeter Design Cost Review**

California Institute of Technology

Presentations of the GEM Barium Fluoride Electromagnetic Calorimeter Design Cost Review. Presented at the GEM Calorimeter Cost Review Meeting held at the SSC Laboratory on April 22, 1992.

Requires GEM Project Manager approval for distribution.

IN-92-00007 04/22/92

**Tile Hadron Calorimeter Design Cost Review**

Oak Ridge National Laboratory

Presentations of the Tile Hadron Calorimeter Design Cost Review. Presented at the GEM Calorimeter Cost Review Meeting held at the SSC Laboratory on April 22, 1992.

Requires GEM Project Manager approval for distribution.

IN-92-00008 04/22/92

**Liquid Krypton Parallel Plate Electromagnetic Calorimeter Design Cost Review**

Oak Ridge National Laboratory

Presentations of the GEM Liquid Krypton Parallel Plate Electromagnetic Calorimeter Design Cost Review. Presented at the GEM Calorimeter Cost Meeting held at the SSC Laboratory on April 22, 1992.

Requires GEM Project Manager approval for distribution.

IN-92-00009 05/08/92

**GEM Magnet Acquisition Plan**

GEM Project Department

This plan describes the procurement process for the solenoidal magnet of the GEM detector. Information is proprietary, not to be shared with industry. The plan follows the FAR requirements and describes the selection of one vendor for magnet design fabrication, assembly and installation. The plan was submitted to the DOE for approval on May 14, 1992.

Requires GEM Project Manager approval for distribution.

IN-92-00010 05/13/92

**Supplemental Environmental Analysis of the GEM Magnet**

Woolley, Ronn

The text of the environmental analysis document submitted for DOE approval on May 14, 1992.

Requires GEM Project Manager approval for distribution.

IN-92-00011 05/05/92

**Muon System Cost Review**

Agenda, attenders, and transparencies of the GEM Muon System Cost Review on May 5, 1992. Agenda items: Overview of Muon System; Mechanical Engineering; Support Structure; Alignment System; Installation of Chambers; Chambers Technologies; PDT; LSDT; RPC; CSC; R&D Program; and Summary/Discussion.

Requires GEM Project Manager approval for distribution.

PN-91-00001 10/07/91

**Jet Contributions to $E_T$ Cross Sections**

Paige, Frank E.

QCD jets can contribute to missing transverse energy ET both because of neutrinos from heavy quarks and because jets are missed at large $\eta$ or mismeasured. These effects are estimated using a simple model.

PN-91-00002 10/07/91

**tt Lepton Triggers**

Paige, Frank E.

A threshold pt ≥ 4- GeV is appropriate for studying tt events.

PN-91-00003 10/07/91

**Possible H → W+W- Signal for 2mW < mH < 2mZ**

Paige, Frank E.

A possible signature H → W+W- → e± $\mu$ ± X for 2mW < mH < 2mZ is considered.

PN-91-00004 09/13/91

**Lepton Triggers at the SSC**

Paige, Frank E.

The dominant sources of prompt leptons at the SSC are decays of c and b quarks in QCD jets, W decays, and top decays. It is important to be able to set the trigger thresholds low enough to be able to study physics just beyond the reach of the Tevatron.

PN-92-00005 03/06/92

**$H \rightarrow \mu\mu\mu\mu$ and $H \rightarrow \mu\mu ee$ Acceptance**

Paige, Frank E.

The loss of acceptance for Higgs events from a gap at $\eta = 0$ in the muon coverage is calculated.

TN-91-00001 07/08/91

**An Expression of Interest to Construct a Major SSC Detector**

TN-91-00002 07/17/91

**GEM Muon Meeting**

Transparencies and contributions to the Second Muon Meeting held at the SSCL on July 17, 1991.

TN-91-00003 07/19/91

**GEM Tracking Meeting SSCL**

Transparencies, contributions and list of participants to the Second Tracking Meeting held at the SSCL on July 19, 1991.

TN-91-00004 09/04/91

**GEM Computing Meeting SSCL**

Agenda, minutes, and available transparencies of the meeting.

TN-91-00005 07/18/91

**GEM Collaboration Council Meeting**

Attendees and transparencies of the GEM Collaboration Council Meeting held at the SSCL on July 18, 1991.

TN-91-00006 10/08/91

**GEM Calorimetry Meeting**

Transparencies from the Calorimetry Meeting held at the SSCL on August 8 and 9, 1991.

TN-91-00007 09/05/91

**Independent Cost Estimate of Spaghetti Hadron Calorimeter**

Ayer, F.

The Draper Laboratory Inc. is providing independent estimates of the costs to build a scintillating fiber Hadron calorimeter for the Gamma Ray, Electron and Muon (GEM) detector. The estimates are a result of earlier studies of the TEXAS and Empact/TEXAS calorimeters, as well as quotes from vendors, and a careful examination of the calorimeter design, fabrication, assembly and testing requirements. An attempt was made to explore design modifications and opportunities to reduce the total cost of the calorimeter. In this report, 3 alternatives were evaluated yielding costs of $77M, $68M and $57M. As the cost is reduced; design, fabrication and material selections affect design complexity and implementation issues that are accounted for by different labor estimates. Contingencies of 10% on materials and 25% on other costs (since they are more difficult to estimate) have been used.

TN-91-00008 08/23/91

**GEM Muon System Meeting Boston University**

Transparencies from the Muon System Meeting held at Boston University on August 23, 1991.

TN-91-00009 09/05/91

**GEM Calorimetry Questions and Answers**

Proponents of candidate calorimetry technologies respond to questions and concerns.

TN-91-00010 09/04/91

**GEM Electronics/Trigger/DAQ Meeting at SSCL**

Transparencies and contributions from the Electronics/Triggering/Data Acquisition Meeting held at the SSCL on September 4, 1991.

TN-91-00011 09/05/91

**GEM Collaboration Council Meeting SSCL**

Transparencies from the GEM Council Meeting at the SSCL on September 5, 1991 are presented.

TN-91-00012 09/04/91

**GEM Calorimetry Meeting SSCL**

Transparencies and contributions from the GEM Calorimetry Meeting held at the SSCL September 4 and 6, 1991 are presented. A separate volume, GEM TN-91-00009, "GEM Calorimetry Questions and Answers," contains proponents' responses to the questions posed by other people.

Actual Dates: 09/04/91 - 09/06/91

TN-91-00013 09/04/91

**GEM Tracking Meeting SSCL**

Transparencies, contributions, and a list of participants to the GEM Tracking Meeting held at the SSCL on September 4, 1991.

TN-91-00014 09/04/91

**GEM Computing Meeting SSCL**

Agenda, minutes, and available transparencies of the meeting.

TN-91-00015 09/12/91

**Comparisons of EM Calorimetry for GEM**

Baltay, Charles

In this note we attempt to make an electromagnetic calorimetry comparison for the process Ho $\rightarrow \gamma\gamma$ that is independent of concerns about cuts and backgrounds.

TN-91-00016 10/01/91

**GEM Muon Meeting SSCL**

Transparencies from the GEM Muon Meeting held at the SSCL on October 1, 1991.

TN-91-00017 09/30/91

**GEM Cost Estimating Plan (LOI)**

Sawicki, Richard

This document describes the format and procedures to be used to develop the GEM cost estimate for the Letter of Intent. This is intended to be the document which instructs the GEM "subsystem engineers" in their responsibilities for the LOI cost estimate. The Work Breakdown Structure (WBS) is defined as the highest levels and guidelines are given for completing it at lower levels by subsystem. Then the matrix to be used for accumulating the cost estimate is explained in detail. Labor rates and the procedure for setting contingencies are then described. Finally, the overall (short!) schedule for the cost estimate effort is given.

TN-91-00018 10/01/91

**GEM Calorimetry Meeting SSCL**

Transparencies from the Calorimetry Meeting held as the SSC Laboratory on October 1, 1991.

TN-91-00019 09/22/91

**SSC GEM Magnetic Field Safety & Health Effects**

Woolley, R. P.

This report focuses upon the safety concerns associated with the fringe magnetic field, generated by the unshielded GEM Detector design. The report's purpose is to present the GEM Collaboration and SSC Directoral management with the regulatory requirements, and background information on human and equipment fringe field effects. Safety issues associated with the effects of the magnetic field upon personnel and equipment will be discussed, with the applicable regulatory requirements noted. The intent then is for SSC management to determine the nature and extent of application of the appropriate safeguarding, in mitigating the risk.

TN-91-00020 09/22/91

**GEM Detector Cost and Design Study for Scintillating Hadron Calorimeters**

Claffey, C. L.

Preliminary cost estimates for the GEM Scintillating Hadron Calorimeter Option are given. The overall goal of these estimates is to meet the standards established by the Theriot panel in earlier reviews. This is in order to enable the calorimeter subsystem group to make decisions as the basis of costs which will be used in the PAC review process after the submission of the GEM LOI.

TN-91-00021 10/02/91

**GEM Collaboration Council Meeting at the SSCL**

Transparencies from the GEM Council Meeting at the SSCL on October 2, 1991 are presented.

TN-91-00022 10/10/91

**GEM Tracking Meeting SSCL**

Transparencies, contributions and list of participants to the Tracking Meeting held at the SSCL on October 10, 1991.

TN-91-00023

**Measurements of Characteristics of the Precision Drift Chamber Prototype**

Barabash, L. S.

Details of the construction of a precision drift chamber prototype is described. Accurate placement of the wires are discussed.

TN-91-00024

**Preformance of Straw Tubes Made by Ultrasoncially Welding Two Layers of Aluminized Mylar Producing 8 Parallel Tube 1 cm in Diameter**

Muzzin, V.

Figures showing the measured performance characteristics of ultrasonically welded straw tubes are given.

TN-91-00025 10/02/91

**GEM PAC Review**

Transparencies from the GEM PAC Review at the SSCL on October 2, 1991 are presented.

TN-91-00026

**Simulation Studies of Liquid Argon and Liquid Ekypton Electronmagnetic Calorimeter Plate Designs for the GEM SSC Detector**

Shupe, Michael A.

TN-91-00027

**Ion Loading in Liquid Ionization Calorimeters**

Rutherfoord, John P.

TN-91-00028

**Forward Calorimeter Transition, Z Position and Segmentation**

Forden, G. E.

TN-91-00029

**Calorimeter e/h Effects on Reconstructing High Pt W/Z Hadrons**

Forden, G. E.

The effect of different calorimeter intrinsic e/h values is investigated for reconstructing high Pt W/Z -- hadrons. The boson's width is found, to first order, to be independent of e/h but a systematic shift is found in the construction mass. This shift is Pt (Z0) dependent and is comparable to cone size effects.

TN-91-00030

**Consideration Leading to the Choice of Open Field Magnet**

Stroynowski, R.

TN-91-00031 11/07/91

**GEM Collaboration Council Meeting**

TN-91-00032 11/30/91

**Signal and Background of H->Gamma Gamma with Proposed GEM Calorimeter Systems**

Zhu, Ren-yuan

This report summarizes main results of a study on signal and background for H $\rightarrow \gamma\gamma$ detection at SSC by using two precision electromagnetic calorimeter options (BaF2 and liquid argon) proposed by GEM collaboration. The consequence of thermal as well as pile-up noise in isolation cone is discussed. A brief discussion of intermediate mass Higgs detection by using associated production channel Htt $\rightarrow \lambda\gamma\gamma$ is also given.

TN-91-00033 03/28/92

**Showershape and Preradiator Study for Higgs $\rightarrow \gamma + \gamma$ Background**

Yamamoto, Hiroaki

In order to observe a clear signal of low mass Higgs with mass around 80 to 140 GeV, it is very important to reject fake isolated $\gamma$s. In this note, the showershape distributions and preradiator signals in the BaF2 are studied to reduce these fate isolated $\gamma$s.

TN-91-00034 11/26/91

**GEM Engineering R&D Plan FY 92 - The GEM Collaboration**

TN-91-00035 11/05/91

**Fringe Field Dipole-Dipole Force Interaction**

Pillsbury, Jr., R. D.

TN-91-00036 11/07/91

**Shielding of the Magnetic Fields from the GEM Magnet**

Myatt, L.

The shielding of the magnetic fields produced by the GEM magnet are described in the memorandum.

TN-91-00037 11/25/91

**GEM Magnet Options: Preliminary Report**

Becker, H.

A strawman muon detector geometry is used in the evaluation of various designs for the GEM magnet. The Muon track resolution for the EOI baseline magnet (superconduction solenoid with thick iron end poles) is compared with an option with modified end poles (the LoI baseline), and with a uniform field. Design magnet options to improve muon resolution at small angles ($1.5 \leq h \leq 2.5$) include the replacement of the iron poles with a superconducting "bottle" solenoid and/or the addition of conical shells (wedges) of iron for field shaping. Because of concern about the far (surface) field, shielded variants which use either a superconducting outer solenoid or an iron flux return are also presented.

TN-91-00038 12/04/91

**A Report on Radiation Damage in Barium Fluoride to the GEM Collaboration**

Woody, Craig L.

This report attempts to summarize the current status of what is known about radiation damage in barium fluoride crystals and how it relates to a high resolution electromagnetic calorimeter at the SSC.

TN-91-00039 11/06/91

**GEM Calorimeter Meeting SSCL**

Agenda and transparencies contributed to the GEM Calorimeter Meeting held on November 6. 1991 at the SSCL.

TN-91-00040 11/05/91

**GEM Tracking Meeting**

TN-91-00041 12/12/91

**Occupancy and Pileup in the GEM Detector**

Rates and detector occupancies for each GEM Detector Subsystem are estimated and summarized.

TN-91-00042 12/05/91

**GEM Collaboration Council Meeting**

Agenda and transparencies contributed to the GEM Collaboration Council Meeting held on December 5, 1991.

TN-91-00043 12/12/91

**GEM Muon Subgroup Meeting**

Agenda, list of participants, and transparencies contributed to the GEM Muon Subgroup Meeting held on December 12, 1991.

TN-91-00044 12/06/91

**GEM Electronics Group Meeting**

Agenda, list of participants, and transparencies contributed to the GEM Electronics Group Meeting held on December 6, 1991.

TN-91-00045 12/04/91

**GEM Calorimetry Meeting**

Agenda and transparencies contributed to the GEM Calorimetry Meeting held on December 4, 1991.

TN-91-00046 11/18/91

**GEM Forward Calorimeter Design Meeting**

Forden, G. E.

Agenda, list of participants, and transparencies contributed to the Forward Calorimeter Design Meeting held at the SSCL on November 18, 1991.

TN-91-00047 12/06/91

**GEM Tracking Meeting**

Transparencies from the Tracking Meeting held at the SSCL on December 6, 1991. Included are gas studies results from Indiana, Silicon Tracker design assumptions from Los Alamos and simulation results from Yale and Los Alamos.

TN-92-00048 01/03/92

**On Quality Requirements to the Barium Fluoride Crystals**

Zhu, Ren-yuan

Barium flouride (BaF2) crystal calorimeter is one of two options being pursued by the GEM collaboration as a candidate precision electromagnetic calorimeter. This report summarizes the considerations on quality requirements to the BaF2 crystals.

This document is superseded by TN-92-00048 Rev. A.

TN-92-00048 Rev. A 02/01/92

**On Quality Requirements to the Barium Fluoride Crystals**

Zhu, Ren-yuan

Barium flouride (BaF2) crystal calorimeter is one of two options being pursued by the GEM collaboration as a candidate precision electromagnetic calorimeter. This report summarizes the considerations on quality requirements to the BaF2 crystals.

TN-92-00049 11/30/91

**GEM Letter of Intent (LOI)**

GEM Collaboration

TN-92-00050 11/08/91

**GEM Muon Meeting**

Agenda, list or participants, and transparencies contributed to the Muon Meeting held at the SSCL on November 8, 1991.

This document was originally issued as GDT-000012

TN-92-00051 10/24/91

**Missing ET Signature for Gluino Production in the GEM Detector for the SSC**

Kahn, Stephen A.

The feasibility of looking for gluino pair production at the SSC with the GEM detector is examined. If the gluino mass is lighter than the quark mass, gluino production would h ave the largest cross section of a SUSY signature. This study compare rates for production of 300 GeV gluinos with background form QCD and Zo production. The background to 300 GeV gluinos from QCD is expected to be large, however with reasonable cuts a signal to noise ratio of 5 : 1 is achieved for $150 < ET < 300$ GeV.

TN-92-00052 10/25/91

**Progress Report on Design and Simulation Studies for a Tungsten and Liquid Argon Forward Calorimeter for the GEM SSC Detector**

Rutherfoord, John P.

GEM is exploring the feasibility of satisfying hermeticity requirements with a relatively compact forward calorimeter quite close to the interaction region. This report explores whether the physics requirements can be met through realistic simulations.

TN-92-00053 01/23/92

**GEM Tracking Meeting SSCL**

Transparencies from the Tracking Meeting held at the SSCL on January 23, 1992. Included are preliminary specifications for the IPC array, cooling for the IPC's and front end electronics for the IPC. There is a silicon tracer update, simulations results from Yale and Los Alamos, and a section on integration issues.

TN-92-00054 11/14/91

**GEM Central Tracker: Design Issues**

Mills, Geoffrey B.

A discussion of design issues of the GEM central tracker is given. General features of the tracker performance are discussed in the context of the SSC environment at luminosities of 1033cm-2s-1 and 1034cm-2s-1.

TN-92-00055 01/23/92

**GEM Collaboration Council Meeting - SSCL**

Transparencies and agenda of the GEM Collaboration Council Meeting held at the SSCL on January 23, 1992.

TN-92-00056 01/24/92

**GEM Calorimeter Meeting - SSCL**

Transparencies and agenda of the GEM Calorimeter Meeting on Central Calorimeter Systems held at the SSCL on January 24, 1992.

TN-92-00057 01/22/92

**GEM Calorimeter Meeting - SSCL**

Transparencies and agenda of the GEM Calorimeter Meeting on Preradiator and Forward Systems held at the SSCL on January 22 and 24, 1992.

Actual Dates: 01/22/92-01/24/92

TN-92-00058 01/22/92

**GEM Muon Group Meeting - SSCL**

Transparencies and agenda of the GEM Muon Subgroup Meeting held at the SSCL on January 22, 1992.

TN-92-00059 01/20/92

**GEM Computing/Simulation Meeting - SSCL**

The Physics group's menu of physics reactions were presented, along with a list of desired single particle types for which parameterizations were desired for fast physics simulations. The subsystem simulation groups worked out sets of parameters which could be provided to the physics group. The simulation groups also gave status reports, and other issues (coding standards and methods, "GEMLIB", and PDSF upgrade) were discussed.

Actual Dates: 01/20/92 - 01/21/92

TN-92-00060 01/24/92

**GEM Muon Group Meeting - SSCL**

Transparencies and agenda for the GEM Muon Group Meeting on January 24, 1992 held at the SSCL.

TN-92-00061 02/06/92

**GEM Muon System Meeting - Boston**

Transparencies and agenda from the GEM Muon System Meeting on February 6, 1992, held in Boston.

TN-92-00062 02/18/92

**Computing Facility Placement Issues, Arguments, Conclusions, and Comments**

McFarlane, Ken

Number issued to Ken McFarlane. Document has not been received and distributed.

TN-92-00063 02/01/92

**The GEM Central Tracker: A Progress Report**

Baltay, Charles

The GEM Central Tracker group now has arrived at a new baseline design which employs Silicon Microstrips for the inner detector and Interpolating Pad Chambers for the outer tracker. This baseline design is described in this Progress Report in some detail.

Number issued to Charles Baltay. The document has not been received from him.

TN-92-00064 02/11/92

**Workshop on Vibrational Control and Dynamic Alignment Issues at the SSC**

Eberle, Cliff

Report to GEM on the Workshop on Vibrational Control and Dynamic Alignment Issues at the SSC

Actual Dates: 02/11/92 - 02/14/92

TN-92-00065 02/19/92

**Physics Motivation for an Improved Tracker for GEM**

Thomas, Jennifer

In order to take advantage of the "no lose" scenario [1], it is essential that GEM be able to measure the charge of electrons to better than 1 in 10(5) at 250 GeV momentum. The "no lose" scenario points out that if no Higgs is found in the SSC energy range, then the longitudinal W scattering should become strongly interacting and the cross section will be enhanced to a measurable value if unitarity is conserved. An improvement to the present GEM tracker design is suggested which enables the best possible momentum resolution to be achieved under the existing boundary conditions of volume and magnetic field.

TN-92-00066 02/01/92

**Previous Analysis of Tracks Data in Solenoid**

Yatsunenko, Yu. A.

Without tracking; determination and separation of primary vertices; preparation of arrays for reconstruction of single track; division of the tracks data onto kinematical subregions; determination of jets.

The day in the date field is not the correct date. Only February 92 was indicated on the cover.

TN-92-00067 02/20/92

**Jet-Energy Measurements with a Noncompensating Calorimeter System**

Paar, H. P.

We study how to obtain a measurement of a jet's energy with a calorimeter that consists of a noncompensating electromagnetic and a compensating or noncompensating hadronic section. We present results obtained with a simple algorithm that gets a best estimate of the true jet energy from the measured signals in each of the two calorimeter sections. The algorithm takes account of the event-to-event fluctuations in the energy deposits in the two calorimeter sections. If the hadronic calorimeter is compensating, all input data required for the method can be measured in beamtests of prototype calorimeter modules, using single electron and pion beams, and multiparticle beams (obtained from a target in a single pion beam). If the hadron calorimeter is noncompensating, additional knowledge is required regarding the jet fragmentation function and the electromagnetic energy fraction in hadronic shower development at SSC/LHC energies. The method works best for high jet energies (e.g. beyond 100 GeV) and its applicability can be extended to lower energies if the electromagnetic calorimeter is made thinner (in terms of nuclear interaction lengths). However, the noncompensating nature of the calorimeter system as a whole introduces nonlinearities in the signals, which cause a systematic uncertainty in the jet energy at the

TN-92-00068 03/10/92

**How Thick Should the GEM Barrel Calorimeter Be?**

McNeil, R.

A simulated study of particles exiting the calorimeter from ordinary two jet events for the GEM detector at the SSC is reported. The overall rate of particles exiting the hadron filter as well as the source of these particles are determined for a constant thickness calorimeter following the GEM baseline tracking volume. Criteria are defined by which the thickness of the calorimeter can be gauged and the minimum thickness determined. From these criteria it is determined that for the rapidity range $0.0 < |\eta| < 1.3$ that 12 $\lambda$ of calorimeter are needed.

TN-92-00068 Rev. A 03/10/92

**How Thick Should the GEM Barrel Calorimeter Be?**

McNeil, R.

A simulated study of particles exiting the calorimeter from ordinary two jet events for the GEM detector at the SSC is reported. The overall rate of particles exiting the hadron filter as well as the source of these particles are determined for a constant thickness calorimeter following the GEM baseline tracking volume. Criteria are defined by which the thickness of the calorimeter can be gauged and the minimum thickness determined. From these criteria it is determined that for the rapidity range $0.0 < |\eta| < 1.3$ that 12 $\lambda$ of calorimeter are needed.

TN-92-00069 03/10/92

**Muon Energy Loss in GEM BaF2/Scintillating Fiber Calorimeter**

McNeil, R.

A GEANT simulation study of energy losses for energetic muons passing through the GEM BaF2 EM calorimeter + scintillating fiber hadron calorimeter is reported. Two choices for the absorber, lead and copper, are considered for the hadron section of the calorimeter. The energy loss distribution is parameterized and a subroutine described for fast simulation of muon energy loss in GEM.

TN-92-00070 03/16/92

**Effects of Limited Calorimeter Coverage on ET**

Paige, Frank E.

Due to a limited calorimeter acceptance QCD jets produced at large $\eta$ will miss the calorimeter, contributing to the measured ET cross-section. A simple calorimeter model is used to estimate this effect.

TN-92-00071 03/19/92

**Comparison of Three- and Four-point Momentum Measurement in a Uniform Magnetic Field**

McFarlane, Ken

Document has not been received from the author.

TN-92-00072 03/01/92

**Drift Gas Studies for GEM Muon System**

Ahlen, S.

Using a specially designed test drift chamber, we present preliminary studies using several gas mixtures which are candidates for the GEM PDT muon system. Drift velocities and Lorentz angles were measured at various magnetic and electric fields intensities.

TN-92-00073 03/01/92

**Basic Information Relating to Use of PDT's: Specification for Wire/Wall a-Concentricity**

Ahlen, S.

The use of cylindrical drift tubes without support bridges for the wire is discussed. Basic formulae for calculating the electric field and the induced tracking errors for this configuration are presented.

TN-92-00074 03/01/92

**Wire Positioning Accuracy Based on Knowledge of Wire Tension**

Ahlen, S.

The wire tension test setup is presented. The sagita-tension relation is presented both calculated and measured, with and without the presence of the electric field.

TN-92-00075 03/01/92

**Measurements of HRS Wire Tensions 12 Years After Construction**

Ahlen, S.

The technique used to build PDTs for the HRS experiment is described. Wire tensions were measured after 12 years indicating good stability over long periods of time.

TN-92-00076 DRAFT 04/07/92

**GEM Baseline 1 Specification**

Barish, Barry

This document details the current GEM detector baseline design. This design will be used for an in-depth analysis of cost, schedule and physics performance. The next revision to this document will be on or about June 5, 1992

TN-92-00077 03/01/92

**Radiation Damage in Large Barium Fluoride Crystals**

Li, P. J.

The radiation damage of barium fluoride (BaF2) cyrstals was investigated through the changes in their optical transmission before and after $\gamma$-ray irradiation. The correlation of radiation damage with crystal growth conditions revealed that the radiation damage is impurity and defect related. As impurity is concerned, when th contents of cationic impurities decrease to a certain tolerated level, oxygen and hydroxyl become most harmful. High density of defect such as scattering centers incrystal also resulted in radiation damage. Thanks to recent progress in BaF2 crystal growth, an encouraging result of radiation test on large crystals has been achieved. On the mechanism of radiation damage it is likely that the oxygen ion came from dissolved oxygen

TN-92-00078 03/01/92

**Radiation Damage of Rare Earth Ions Doped Barium Fluoride Crystals**

Chen, G.

The radiation resistance of rare earth dope barium fluoride (BaF2) crystals was investigated. Stable trivalence elements, such as Y, La and Lu, have no effect on radiation resistance. While the elements which changes its valence from +3 to +4 under irradiation, such as Ce and Pr, are harmful to the radiation resistance of BaF2, the elements which changes its valence from +3 to +2 under irradiation, such as Sm, Eu, Dy, and Yb, are useful in eliminating color centers in visible range, but may introduce some additional color center in UV range.

TN-92-00079 12/05/91

**Intermediate Mass Higgs → WW Decay**

Yamamoto, Hiroaki

The Higgs decay mode, H → W+W-, is very important in the Higgs mass range above the W+W- threshold and below the Z0Z0 threshold. In this note, the leptonic decays of this process H → W+W- → e+ m-, has been studied for various top mass, and it is shown that the background against this signal can be reduced to the same size as the signal and that we can expect to have statistically significant signal.

TN-92-00080 03/08/92

**GEM Muon Group Meeting - Tucson**

Agenda, attenders, and transparencies of the GEM Muon group meeting held at Tucson on March 8, 1992. Agenda: (1) Review of the new baseline; (2) Status of the trigger; (3) Status of engineering design; (4) R&D short term goals and schedule; (5) cost review preparation; and (6) Long range plans - EDR and beyond.

TN-92-00081 03/31/92

**Jazelle Data Manager for GEM, The**

Johnson, A.S.

The Jazelle data management package has been developed over the proceeding seven years, initially for the SLD experiment at SLAC. The system was designed as a successor to earlier systems such as Bos and Zebra and includes many improvements over these systems such as self-documenting data structures, mnemonic access to all data, relational data structures, powerful machine-independent IO facilities and many mechanisms for presenting data to the physicist in an intuitive manner. This paper presents a brief and informal introduction to the JAZELLE data management system and highlights some of the ways in which its use could prove beneficial to the GEM Collaboration.

TN-92-00082 04/01/92

**GEM Magnet Subsystem Industrial Subcontract Information Meeting**

Agenda and transparencies of the GEM Magnet Subsystem Industrial Subcontract Information Meeting held at the SSC Laboratory on April 1, 1992.

TN-92-00083 03/08/92

**GEM Trigger/DAQ Group Meeting**

Attenders and transparencies of the GEM Trigger/DAQ Group Meeting held at the Collaboration Meetings in Tuscon on March 8 and 10, 1992.

TN-92-00084 03/08/92

**GEM Calorimeter Group Meeting - Tucson**

Agenda and transparencies of the GEM Calorimeter Meeting held at the GEM Collaboration meeting in Tucson on March 8, 1992.

TN-92-00085 03/08/92

**GEM Collaboration Meeting - Tucson**

Agenda, attenders and transparencies of the GEM Collaboration Meeting held in Tucson on March 8-11, 1992.

TN-92-00086

**Unassigned**

TN-92-00087 04/02/92

**Central Tracker Meeting**

Transparencies of the presentations at the April 2, 1992 meeting at the SSCL. Included are capacitance calculations and measurements for the IPC pads, status reports for Silicon Tracker, IPC electronics, simulations, and integration. A short discussion of test beam possibilities at SLAC is also included.

TN-92-00088 04/17/92

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TN-92-00089 04/14/92

**GEM Detector For the SSC: U.S. - Republic of Korea Working Group Meeting**

Gary Sanders

Transparencies of the presentations at the April 14, 1992 Republic of Korea Working Group Meeting.

TN-92-00090 04/22/92

**Liquid Argon Calorimeter Cost Review Meeting - SSCL**

Transparencies of the presentations at the April 22, 1992 Liquid Argon Calorimeter Cost Review Meeting. Agenda items were: Resolution vs. Angle, Thickness; Status of Engineering; Cost Estimate; R&D Issues; Foreign Contribution Models; Preradiator; and Separate EM, EM+Forward.

This Document Number was changed to GEM IN-92-00003

TN-92-00091 04/04/92

**Progress Report: Neutron Flux in the GEM Detector**

Lee, David M.

The status of neutron fluence calculations throughout the GEM detector using the LAHET/MCNP code is described. Included are studies of fluence through the silicon vertex detector, and suppression obtainable with borated polyethylene. Also addressed are fluences within the endcap and forward calorimeters, as well as along the first muon chamber after the endcap. This report will be updated as new results are obtained, and old calculations are redone to reflect changes in detector geometry and materials.

TN-92-00092 04/27/92

**Simulations of Accordion EM Calorimeters**

Ma, Hong

This is a summary of the GEANT simulation of the non-projective accordion EM calorimeters. Most of the simulations are related to the prototype stacks that are being built at BNL. EM shower resolution, position resolution, g æ po separation, chevron electrodes, resolution at large incident angle and effect of the cryostat walls are discussed.

TN-92-00093 09/25/92

**Muon Drift Chamber Physics and Engineering R&D Activities for the L* and GEM Detectors in FY 1991**

Ables, E.

This paper will describe the work carried out at LLNL on muon chamber R&D for the L* detector in FY 1991. Because of the L* proposal rejection in May, 1991, and the subsequent restructuring to form the GEM detector collaboration in July, 1991, the work described in this paper will also be seen to be applicable to the envisioned muon chamber subsystem for GEM.

TN-92-00094 05/01/92

**Calorimeter Meeting SSCL**

Agenda, presentation, and attenders of the GEM Calorimeter Meeting held at the SSC Laboratory on May 1, 1992. Agenda items were: Baseline Status; Forward Activities; Discussion on April 21/22 Cost Review and International Contributions; BaF2 Activities; SSCintCal Activities; LAr Activities; Quartz Fiber Calorimeter; SSCL Test Beam Facilities; and Simulations and Test Beam Data.

TN-92-00095 04/30/92

**Collaboration Council Meeting SSCL**

Agenda and presentation of the GEM Collaboration Council Meeting held at the SSC Laboratory on April 30, 1992. Agenda items were: Status and News; GEM Facilities; Baseline 1 Overview; Subsystem Reports: Central Tracker; Calorimeters, Muons, Triggering/Electronics, Computing, Magnet, and Physics; Test Beam Report; R&D/Engineering; Cost Review; and Report/Discussion GEM Organization Committee.

TN-92-00096 03/01/92

**Considerations Regarding Tube Wall Material**

Ahlen, Steven

We discuss several options for the PDT tube wall materials in our proposed pressure and temerature conditions. Physical properties of those options are presented, which, together with costs considerations, lead us to the conclusion that Aluminum PDTs should be the best choice.

TN-92-00097 04/09/92

**Considerations on the Addition of Detector Planes Outside the GEM Magnet and on the Implementation of a Vertex Constraint**

Rosenson, Larry

An investigation has been made of the possible performance improvements of the muon system with the addition of a fourth superlayer and also with the inclusion of a vertex constraint. It is recommended that space be reserved for the addition of a detector layer outside the cryostat in the barrel region for a potential improvement in the resolution and increase in robustness/redundancy. The endcap resolution is found not to be subject to improvement with the addition of an extra layer. The vertex constraint is likely to yield significant improvement over the whole angular range and provision should be made to measure and maintain the required global alignment of the vertex detector to permit it's useful inclusion in the muon detector track reconstruction.

TN-92-00098 05/12/92

**Shielding in 300 - 1000 G Background Field**

Martovetsky, N. N.

Efficiency of shielding is very dependent on the volume to be shielded and on the shape of the iron shield. This is preliminary data for shielding in uniform field of 300 - 1000 G which covers the values of field flux density in the experimental hall in the median plane of the magnet outside the vacuum vessel. The objective of the study is to figure out the thickness of the shield to bring the field down to less than 50 G level.

TN-92-00099 05/18/92

**Monte Carlo Studies of the Texas Test Rig Performance**

Vanyashin, A.

To test the performance of different muon chamber technologies proposed for the GEM experiment at the SSC, the Texas Test Rig (TTR) will be established at the SSC Laboratory. The results of Monte Carlo studies of TTR are presented. An optimized off-line selection algorithm is found.

TN-92-00100 05/01/92

**Momentum Resolution Criteria for the Central Tracker**

Zhou, B.

We present our calculation of the GEM central tracker resolution necessary for muon identification. The production of top quark pair and its background is analyzed.

TN-92-00101 05/01/92

**Study of Hadron Punchthrough and Muon Rates at the SSCYuan-Hann Chang**

Chang, Yuan-Hann

Hadron punchthrough probabilities functions of hadron energy and absorber length at the SSC are studied in detail. Energy spectra, charged multiplicity and the angular spread distributions of the punchthrough are presented. Total muon rates are calculated for the GEM detector baseline design.

TN-92-00102 04/29/92

**Muon Group Meeting - SSCL**

Agenda, attenders, and transparencies of the GEM Muon Group Meeting held at the SSCL on April 29, 1992. The meeting was to focus on preparations for the TTR tests this summer. Agenda items: General Issues; Review of Baseline; Definition of Goals for TTR Test; Status Reports of R&D Efforts; Discussion of TTR Test; Update on Simulations; Preparations for May 5 Cost Review; Assignment for TDR Preparation; and Discussion/Review.

TN-92-00103 05/01/92

**Ho $\rightarrow$ ZZ* $\rightarrow$ $\lambda+\lambda-$ $\lambda+\lambda-$ : Search for 140 < MHo < 180 GeV**

Zhou, B.

We present our calculation for the Higgs production in the case of four leptons in final state. The background for these events is analyzed. The triggers performance and requirement are presented.

TN-92-00104 05/28/92

**IEEE Standard 754 and You: What the GEM Computer User Needs to Know About IEEE Floating-Point Arithmetic**

Roberts, Lee A.

GEM computer users, for better or for worse, will interact with the IEEE Standard for Binary Floating-Point Arithmetic (IEEE 754). All of today's popular RISC/UNIX architectures support the IEEE 754 standardæboth in data format and exception handling. However, details of the IEEE 754 exception handling vary among the RISC/UNIX architectures. GEM code development efforts on these popular RISC/UNIX systems can be greatly enhanced with proper understanding of IEEE 754 exception handling. Suggestions for successful use of the IEEE 754 standard are presented for each of today's popular RISC/UNIX architectures.

TN-92-00105 05/28/92

**The Mylar Straw Tubes: Test Results and Applications to Muon Tracking**

Chirikov-Zorin, I.

We report the test results of a 1 m long block of mylar straw tubes consisting of 64 channels. The spatial resolution and charge distribution have been obtained. The application to muon tracking of GEM are discussed.

TN-92-00106 05/20/92

**Muon Engineering Status Meeting - M.I.T.**

Agenda, attenders, and transparencies of the GEM Muon Engineering Status Meeting held at M.I.T. on May 20, 1992. Agenda items: Comments; Draper Management Information; Muon System Design: Structures, Chambers, and PDT Chamber Design; Alignment; Cost Book; and Action Items.

TN-92-00107 05/27/92

**Muon Engineering Status Meeting - M.I.T.**

Agenda, attendees, and transparencies of the GEM Muon Engineering Status Meeting held at M.I.T. on May 27, 1992. Agenda items: Comments; Report on SSCL Align MTG., 5/22; Update of Cost Matrix; Review of 5/20 Action Items; Review Draft Memo for A/I #4 (Magnet Info); Comments on Other Eng. Efforts; Action Items; and Set Agenda for Next Week.

TN-92-00108 06/03/92

**A Nondestructive Method for Beam Profile and Absolute Position Measurement**

Maschke, A.W.

A narrowly collimated beam of low energy heavy atoms can be used as a probe to determine the profile and position of the SSC beam with resolution measured in microns.

TN-92-00109 06/04/92

**Central Tracker Meeting - SSCL**

Agenda, attendees, and transparencies of the GEM Central Tracker Meeting held at the SSC Laboratory on June 4, 1992. Discussions of Budgets, Simulations in Taiwan, R&D on IPC's, Integration Issues and Silicon Optimization.

TN-92-00110 06/05/92

**Barium Fluoride Calorimeter Meeting - SSCL**

Agenda, attendees, and transparencies of the GEM Barium Fluoride Calorimeter Meeting held at the SSC Laboratory on June 5, 1992. Agenda items included: Introduction; Calorimeter System Engineering Overview; GEM Engineering Integration Issues and Schedules; BaF2 Progress in China; LLNL R&D Progress; Discussion of BaF2 Detector Production Scenario; Scintillating Fiber HCAL Design and Test Status; Discussion of BaF2 and SSCintCal Engineering and GEM Detector Issues; BaF2 R&D and Options for Crystal Production and Test in Russia; BaF2 Radiation Damage Studies (U.S.); Discussion: Work Plan and Milestones for the GEM Decision, and TDR; Preliminary Discussion of R&D Needs for FY93, and Test Beam; Test with Hadron and the AGS and LAMPF in June; Cosmic Ray and UV Monitor Test Setups at UCSD and CMU; and Progress and Plans on BaF2 Simulation: Fast Simulation, Detector Calibration.