

## CURRICULUM VITAE - August 2009

David Hedin  
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Date of Birth: November 11, 1954

### Employment

- 2009- Board of Trustees Professor, Northern Illinois University.
- 2002- Distinguished Research Professor, Northern Illinois University.
- 2007- Deputy Director, NICADD, Department of Physics.
- 2000-2009 Director of Graduate Studies, Department of Physics.
- 2000-2007 Assistant Chair, Department of Physics.
- 1999-2000 Acting Director of Graduate Studies, Department of Physics.
- 1998-2002 Presidential Research Professor, Northern Illinois University.
- 1996-1998 Professor, Northern Illinois University, Department of Physics.
- 1990-1996 Associate Professor, Northern Illinois University, Department of Physics.
- 1987-1990 Assistant Professor, Northern Illinois University, Department of Physics.
- 1986 Senior Research Associate, SUNY at Stony Brook, Department of Physics.
- 1985-1986 Research Associate, SUNY at Stony Brook, Department of Physics.
- 1981-1985 Postdoctoral Research Associate, SUNY at Stony Brook, Department of Physics.
- 1976-1980 Research Assistant, University of Wisconsin, Department of Physics.
- 1975-1976 Wisconsin Alumni Research Foundation Fellowship, University of Wisconsin.

### Education

- 1975-1980 University of Wisconsin. Ph.D. Thesis topic: "A Measurement of the Rate of Formation of Pi-Mu Atoms in  $K_L$  Decay". Advisor: S.H. Aronson.
- 1972-1975 Southern Illinois University, B.S. Physics, award for academic excellence, graduated first in class of 3500.

## RESEARCH ACTIVITIES

- 1976-1982 Participated in experiments E-226, E-486, E-533 and E-584 (Chicago - Stanford - Wisconsin) at Fermilab. Measured the  $K_L$ -nucleus total cross section, the  $K_L$  to  $K_S$  regeneration rate by nuclei and electrons, the formation rate of pi-mu atoms in  $K_L$  decay and set limits on the production of new long-lived particles with masses between .5 and 5 GeV. Responsibilities for constructing the M3 neutral beam; for constructing and monitoring the analyzing magnets; for operation of the trigger system; for developing the Monte Carlo and pattern recognition software programs; and for analyzing the pi-mu atom data.
- 1981-1986 Participated in experiments E-734 and E-775 (BNL-Brown-Hiroshima-KEK-Osaka-Pennsylvania-Stony Brook) at Brookhaven. Measured the elastic scattering of neutrinos and antineutrinos off electrons and protons and searched for neutrino oscillation via  $\nu_\mu \rightarrow \nu_e$ . Responsibilities for constructing the lead-liquid scintillator shower counter; for designing, constructing and operating the magnetic spectrometer; for determining the energy spectrum and flavor composition of the neutrino beam; for developing the Monte Carlo and pattern recognition software programs; for analyzing the neutrino-proton elastic scattering data.

- 1982-2009 Participated in the design and construction of a detector for the Fermilab proton-antiproton collider (the D0 collaboration). While at Stony Brook, had responsibilities for measuring the hadronic punchthrough probability; for estimating the muon trigger rate; for the muon drift tube design; for the muon drift tube layout; and for coordinating the muon software (1985-1993,1994-1997). After forming the NIU group in 1986, continued coordinating the muon software; developing the muon analysis program; developing and testing the muon trigger and readout system; and testing muon electronic components. Coordinator of muon identification group (1991-1997). Co-coordinator of the B-physics analysis group (1991-1994). Participated in discovery of the top quark (1993-1995): organized 1993 workshop at NIU; on internal review panel for 1994 results; did final verification of muon identification for 1995 discovery. Measured b-quark production cross section. Searched for new phenomena decaying into neutrinos plus two b-quarks; set limits on third generation leptoquarks, ZX decays, and bottom squarks (1996-1999). Participated in D0 muon upgrade (1993-2002) with responsibilities for detector design, for the construction and operation of central scintillation counters, for the development of aspects of the muon reconstruction software, and coordination of muon identification group (2000-2001, 2008-2009). Using Run II data, searched for new particles including long-lived massive particles, third generation leptoquarks, scalar bottom quarks, Higgs bosons in the ZH channel, and excess of dimuon events at large distance.
- 1985-1993 Participated in detector design for the SSC; 1991-1993, member of the SDC collaboration primarily involved in the muon system.
- 2002, 2008-2009 Participated in muon cooling R&D for use at a possible muon collider or neutrino factory.
- 2001-2009 Participated in studies for detectors at an electron-positron linear collider (ILC) or muon collider.

## PUBLICATIONS

1.  $K_S$  Regeneration on Electrons from 30 to 100 GeV/c: A Measurement of the  $K^0$  Charge Radius, W.R. Molzon, J. Hoffnagle, J. Roehrig, V.L. Telegdi, B. Winstein, S.H. Aronson, G.J. Bock, D. Hedin, G.B. Thomson, A. Gsponer, Phys. Rev. Lett., **41**, 1213 (1978).
2.  $K_L$ -Nucleus Total Cross Sections Between 30 and 150 GeV/c: Quantitative Evidence for Inelastic Screening, A. Gsponer, et al., Phys. Rev. Lett., **42**, 9 (1979).
3. Precise Coherent  $K_S$  Regeneration Amplitudes for C, Al, Cu, Sn, and Pb Nuclei from 20 to 140 GeV/c and their Interpretation, A. Gsponer, et al., Phys. Rev. Lett., **42**, 13 (1979).
4. Measurement of the Rate of Formation of Pi-Mu Atoms in  $K_L$  Decay, S.H. Aronson, R.H. Bernstein, R.D. Cousins, Jr., J.F. Greenhalgh, D. Hedin, M. Schwartz, T.K. Shea, G.B. Thomson, B. Winstein, Phys. Rev. Lett., **48**, 1078 (1982).
5. Measurement of the Cross Section of  $\nu_\mu + e^- \rightarrow \nu_\mu + e^-$ , L.A. Ahrens, et al., Phys. Rev. Lett., **51**, 1514 (1983).
6. Response of a Highly Segmented Extruded Lead Glass Calorimeter to Electrons and Pions Between 15 and 45 GeV/c, R. Engelmann, L. Godfrey, P.D. Grannis, D. Hedin, D.E. Jaffe, T. Kafka, M.D. Marx, R. Dixon, H. Jostlein, P. Franzini, D. Cutts, R.E. Lanou, S. Aronson, NIM, **216**, 45 (1983).
7. Measurement of the Ratio of Cross Sections for Neutrino and Antineutrino Scattering from Electrons, L.A. Ahrens, et al., Phys. Rev. Lett., **54**, 18 (1985).

8. New Limit on the Strength of Mixing Between  $\nu_\mu$  and  $\nu_e$ , L.A. Ahrens, et al., Phys. Rev. D, **31**, 2732 (1985).
9. Precise Determination of  $\sin^2\theta_W$  from Measurements of the Differential Cross Sections for  $\nu_\mu + p \rightarrow \nu_\mu + p$  and  $\bar{\nu}_\mu + p \rightarrow \bar{\nu}_\mu + p$ , K. Abe, et al., Phys. Rev. Lett., **56**, 1107 (1986).
10. Hadron Showers and Muon Trajectories in Thick Absorber from 25 GeV/c to 150 GeV/c, D. Green, H. Fenker, H. Haggerty, P. Martin, M. Takasaki, R. Yamada, S. Kunori, P. Rapp, D. Owen, P. Grannis, D. Hedin, NIM, **A244**,356 (1986).
11. Measurement of the Rate of Formation of Pi-Mu Atoms in  $K_L$  Decay, S.H. Aronson, R.H. Bernstein, R.D. Cousins, Jr., J.F. Greenhalgh, D. Hedin, M. Schwartz, T.K. Shea, G.B. Thomson, B. Winstein, Phys. Rev. D, **33**, 3180 (1986).
12. Determination of the neutrino fluxes in the Brookhaven wide-band beams, L.A. Ahrens, et al., Phys. Rev. D, **34**, 75 (1986).
13. Measurement of neutrino-proton and antineutrino-proton elastic scattering, L.A. Ahrens, et al., Phys. Rev. D, **35**, 785 (1987).
14. Measurement of the Weak-Neutral-Current Coupling Constants of the Electron and Limits on the Electromagnetic Properties of the Muon Neutrino, K. Abe, et al., Phys. Rev. Lett., **58**, 636 (1987).
15. A Massive, Fine-Grained Detector for the Elastic Reactions Induced by Neutrinos in the GeV Energy Region, L.A. Ahrens, et al., NIM, **A254**, 515 (1987).
16. Comparison of narrow-band and wide-band neutrino beams in the search for  $\nu_\mu \rightarrow \nu_e$  oscillations, L.A. Ahrens, et al., Phys. Rev. D, **36**, 702 (1987).
17. A Search for Heavy Neutrino Decays in a Neutrino Beam, L.A. Ahrens, et al., Physics Letters B, **194**, 586 (1987).
18. The Use of SA/SD Methods in D0 Software Development, J. Linnemann, et al., Computer Physics Communications, **45**, 245 (1987).
19. A study of the axial-vector form factor and second class currents in antineutrino quasielastic scattering, L.A. Ahrens, et al., Physics Letters B, **202**, 284 (1988).
20. Search for new, long-lived, neutral particles, R.H. Bernstein, T.K. Shea, B. Winstein, R.D. Cousins, Jr., J.F. Greenhalgh, M. Schwartz, G.J. Bock, D. Hedin, G.B. Thomson, Phys. Rev. D, **37**, 3103 (1988).
21. Determination of  $\sin^2\theta_W$  from Measurements of the Differential Cross Sections for Muon-Neutrino and -Antineutrino Scattering by Electrons, K. Abe, et al., Phys. Rev. Lett., **62**, 1709 (1989).
22. D0 muon system with proportional drift tube chambers, C. Brown, et al., NIM, **A279**, 331 (1989).
23. Determination of electroweak parameters from the elastic scattering of muon neutrinos and antineutrinos on electrons, L.A. Ahrens, et al., Phys. Rev. D, **41**, 3297 (1990).
24. Study of Fast Gases, Resolutions, and Contaminants in the D0 Muon System, J.M. Butler, et al., NIM, **A290**, 122 (1990).
25. Muon Rates at the SSC, D. Green and D. Hedin, NIM, **A297**, 111 (1990).
26. Elastic scattering of muon-neutrinos and muon-antineutrinos by electrons, K. Abe, et al., Nuclear Physics B (Proc. Suppl.) **13**, 325 (1990).
27. The D0 Muon VME-based Trigger Electronics, M. Fortner, et al., IEEE Transactions on Nuclear Science, **38**, 480 (1991).
28. Beam Tests of the D-Zero Uranium Liquid Argon End Calorimeters, the D-Zero collaboration, NIM, **A324**, 53 (1993).
29. The D0 Detector, S. Abachi, et al., NIM, **A338**, 185 (1994).
30. First Generation Leptoquark Search in  $p\bar{p}$  Collisions at  $\sqrt{s} = 1.8\text{TeV}$ , S. Abachi, et al., (The D0 Collaboration), Phys. Rev. Lett., **72**, 965 (1994).

31. Search for the Top Quark in  $p\bar{p}$  Collisions at  $\sqrt{s} = 1.8$  TeV, S. Abachi, et al., (The D0 Collaboration), Phys. Rev. Lett., **72**, 2138 (1994).
32. Rapidity Gaps between Jets in  $p\bar{p}$  Collisions at  $\sqrt{s} = 1.8$  TeV, S. Abachi, et al., (The D0 Collaboration), Phys. Rev. Lett., **72**, 2332 (1994).
33. Search for High Mass Top Quark Production in  $p\bar{p}$  Collisions at  $\sqrt{s} = 1.8$  TeV, S. Abachi, et al., (The D0 Collaboration), Phys. Rev. Lett., **74**, 2422 (1995).
34. Observation of the Top Quark, S. Abachi, et al., (The D0 Collaboration), Phys. Rev. Lett., **74**, 2632 (1995).
35. Inclusive  $\mu$  and b-quark Production Cross Sections in  $p\bar{p}$  Collisions at  $\sqrt{s} = 1.8$  TeV, S. Abachi, et al., (The D0 Collaboration), Phys. Rev. Lett., **74**, 3548 (1995).
36. Search for Squarks and Gluinos in  $p\bar{p}$  Collisions at  $\sqrt{s} = 1.8$  TeV, S. Abachi, et al., (The D0 Collaboration), Phys. Rev. Lett., **75**, 618 (1995).
37. Search for W boson pair production in  $p\bar{p}$  Collisions at  $\sqrt{s} = 1.8$  TeV, S. Abachi, et al., (The D0 Collaboration), Phys. Rev. Lett., **75**, 1023 (1995).
38. Limits on the anomalous  $ZZ\gamma$  and  $Z\gamma\gamma$  couplings in  $p\bar{p}$  collisions at  $\sqrt{s} = 1.8$  TeV, S. Abachi, et al., (The D0 Collaboration), Phys. Rev. Lett., **75**, 1028 (1995).
39. Measurement of the  $WW\gamma$  gauge boson couplings at  $\sqrt{s} = 1.8$  TeV, S. Abachi, et al., (The D0 Collaboration), Phys. Rev. Lett., **75**, 1034 (1995).
40. W and Z boson Production in  $p\bar{p}$  Collisions at  $\sqrt{s} = 1.8$  TeV, S. Abachi, et al., (The D0 Collaboration), Phys. Rev. Lett., **75**, 1456 (1995).
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42. Search for Heavy W Bosons in 1.8 TeV  $p\bar{p}$  Collisions, S. Abachi, et al., (The D0 Collaboration), Phys. Lett. B, **358**, 405 (1995).
43. A Study of the Strong Coupling Constant using W + Jet Processes, S. Abachi, et al., (The D0 Collaboration), Phys. Rev. Lett., **75**, 3226 (1995).
44. Top Quark Search with the D0 1992-93 Data Sample, S. Abachi, et al., (The D0 Collaboration), Physical Review D, **52**, 4877 (1995).
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51. Studies of Topological Distributions of Inclusive Three- and Four-Jet Events in  $p\bar{p}$  Collisions at  $\sqrt{s} = 1800$  GeV with the D0 Detector, S. Abachi, et al., (The D0 Collaboration), Phys. Rev. D, **53**, 6000 (1996).
52. The Azimuthal Decorrelation of Jets Widely Separated in Rapidity, S. Abachi, et al., (The D0 Collaboration), Phys. Rev. Lett., **77**, 595 (1996) .
53. Search for anomalous WW/WZ to electron plus jets production, S. Abachi, et al., (The D0 Collaboration), Phys. Rev. Lett., **77**, 3303 (1996).
54. Measurement of the W Boson Mass, S. Abachi, et al., (The D0 Collaboration), Phys. Rev. Lett., **77**, 3309 (1996).

55. Search for Additional Neutral Gauge Bosons, S. Abachi, et al., (The D0 Collaboration), Physics Letters B, **385**, 471 (1996).
56. The Isolated Photon Cross Section in the Central and Forward Rapidity Regions in  $p\bar{p}$  Collisions at  $\sqrt{s} = 1.8$  TeV, S. Abachi, et al., (The D0 Collaboration), Phys. Rev. Lett., **77**, 5011 (1996).
57. Search for Diphoton Events with Large Missing Transverse Energy in  $p\bar{p}$  Collisions at  $\sqrt{s} = 1.8$  TeV, S. Abachi, et al., (The D0 Collaboration), Phys. Rev. Lett., **78**, 2070 (1997).
58. Limits on Anomalous  $WW\gamma$  Couplings from  $p\bar{p} \rightarrow W\gamma + X$  Events at  $\sqrt{s} = 1.8$  TeV, S. Abachi, et al., (The D0 Collaboration), Phys. Rev. Lett., **78**, 3634 (1997).
59. Study of the  $ZZ\gamma$  and  $Z\gamma\gamma$  Couplings in  $Z(\nu\nu)\gamma$  Production, S. Abachi, et al., (The D0 Collaboration), Phys. Rev. Lett., **78**, 3640 (1997).
60. Search for a Fourth Generation Charge -1/3 Quark via Flavor Changing Neutral Current Decay, S. Abachi, et al., (The D0 Collaboration), Phys. Rev. Lett., **78**, 3818 (1997).
61. Direct Measurement of the Top Quark Mass, S. Abachi, et al., (The D0 Collaboration), Phys. Rev. Lett., **79**, 1197 (1997).
62. Measurement of the Top Quark Pair Production Cross Section at  $\sqrt{s} = 1.8$  TeV, S. Abachi, et al., (The D0 Collaboration), Phys. Rev. Lett., **79**, 1203 (1997).
63. Limits on  $WWZ$  and  $WW\gamma$  Couplings from  $p\bar{p} \rightarrow evjjX$  Events at  $\sqrt{s} = 1.8$  TeV, B. Abbott, et al., (The D0 Collaboration), Phys. Rev. Lett., **79**, 1441 (1997).
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66. Scintillation Counters for the D0 Muon Upgrade, B.S. Acharya, et al., Nucl. Instr. and Methods A **401**, 45 (1997).
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68. Search for Top Squark Pair Production in the Dielectron Channel, S. Abachi, et al., (The D0 Collaboration), Phys. Rev D **57**, 589 (1998).
69. Experimental Search for Chargino and Neutralino Production in Supersymmetry Models with a Light Gravitino, B. Abbott, et al., (The D0 Collaboration), Phys. Rev. Lett., **80**, 442 (1998).
70. Measurement of Dijet Angular Acceptance and Search for Quark Compositeness, B. Abbott, et al., (The D0 Collaboration), Phys. Rev. Lett., **80**, 666 (1998).
71. Search for the Trilepton Signature from the Associated Gaugino Pair Production, B. Abbott, et al., (The D0 Collaboration), Phys. Rev. Lett., **80**, 1591 (1998).
72. Search for First Generation Scalar Leptoquark Pairs in  $p\bar{p}$  Collisions at  $\sqrt{s} = 1.8$  TeV, B. Abbott, et al., (The D0 Collaboration), Phys. Rev. Lett., **80**, 2051 (1998).
73. Measurement of the Top Quark Mass using Dilepton Events, B. Abbott, et al., (The D0 Collaboration), Phys. Rev. Lett., **80**, 2063 (1998).
74. A Measurement of the W Boson Mass at the Fermilab  $p\bar{p}$  Collider, B. Abbott, et al., (The D0 Collaboration), Phys. Rev. Lett., **80**, 3008 (1998).
75.  $Z\gamma$  Production in  $p\bar{p}$  Collisions at  $\sqrt{s} = 1.8$  TeV and Limits on Anomalous  $ZZ\gamma$  and  $Z\gamma\gamma$  Couplings, B. Abbott, et al., (The D0 Collaboration), Phys. Rev D **57**, R3817 (1998).
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81. Limits on anomalous  $WW\gamma$  and  $WWZ$  couplings, B. Abbott, et al., (The D0 Collaboration), Phys. Rev. D. **58**, 31102 (1998).
82. Limits on  $WW\gamma$  and  $WWZ$  couplings from W boson pair production, B. Abbott, et al., (The D0 Collaboration), Phys. Rev. D. **58**, 51101 (1998).
83. Direct Measurement of the Top Quark Mass at D0, B. Abbott, et al., (The D0 Collaboration), Phys. Rev. D. **58**, 52001 (1998).
84. Measurement of the W boson mass, B. Abbott, et al., (The D0 Collaboration), Phys. Rev. D **58**, 92003 (1998).
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37. Studies of Jet-Jet Masses with Two B-Tagged Jets with the D0 Detector, D. Hedin, talk given at the TEV33 Workshop (Physics at a High Luminosity Tevatron Collider), Fermilab, May, 1996.
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39. Studies of  $HZ \rightarrow b\bar{b}\nu\bar{\nu}$  and  $gg \rightarrow H \rightarrow b\bar{b}$  at the Tevatron, D. Hedin, 1996 DPF/DPB Workshop on New Directions for High Energy Physics, Snowmass, July, 1996.
40. Thoughts on Designing Detectors for Really Large Hadron Colliders, D. Hedin, 1996 DPF/DPB Workshop on New Directions for High Energy Physics, Snowmass, July, 1996.
41. Leptoquark Results from D0, D. Hedin, Pheno 97:International Symposium on Recent Developments in Phenomenology, Madison, March, 1997.
42. Search for Third Generation Leptoquarks at D0, D. Hedin, American Physical Society meeting, Washington, April, 1997.
43. Status Report on Upgrade Scintillation Counters, D. Hedin, talk given at the D0 Workshop, Indiana University, July, 1997.
44. Leptoquark Searches at Fermilab, colloquium given at Illinois Institute of Technology, March, 1998.
45. Leptoquark Searches at Fermilab, invited talk given at the Latin American Symposium on High Energy Physics, San Juan, April, 1998.
46. Studies of  $ZH \rightarrow \nu\nu b\bar{b}$ , talk presented at the Supersymmetry/Higgs Workshop, Fermilab, May, 1998.
47. SUSY Searches at D0, invited talk given at the Division of Particles and Fields Conference, Los Angeles, January, 1999.
48. Studies of the  $E_{Tmiss} + b\bar{b}$  Channel, seminar presented at the University of Arizona, March, 1999.
49. NIU Physics Outreach Program, Illinois Deans' Meeting, NIU, October, 2001.
50. Einstein's 1905 papers, New Ideas in Science Symposium - The World Year in Physics, NIU, February, 2005.

51. The D0 Muon System and Identification for the next  $4 \text{ fb}^{-1}$ , D0 Summer Workshop, Prague, August, 2008.
52. Recent Results from D0, Physics Department colloquium, NIU, September, 2008.
53. How our view of the Universe can change, New Ideas in Science: Galileo Conference, NIU, February, 2009.
54. Status of Tevatron Searches Beyond the Standard Model, invited talk, APS meeting, Denver, May, 2009.

### Internal Fermilab-D0 Reports

#### Note No.

- 23 D0 Muon Monte Carlo, D. Hedin, 9/29/83.
- 32 D0 Muons (UrAr II), D. Hedin, 10/1/83.
- 141 ISAJET of the Fermilab VAX, D. Hedin, 10/16/84.
- 166 Muons in Jets:Hit Density, D. Hedin, 1/20/85.
- 167 W, Z, and Top Geometric Acceptances, D. Hedin, 1/22/85.
- 168 BNL E-734 Drift Tubes, D. Hedin, 1/2/85.
- 193 E-740 Proportional Drift Tube Tests, C. Brown et al., 3/15/85.
- 304 Hadron Showers and Muon Trajectories, D. Green et al., 11/1/85.
- 341 How to use the additional 3" between the calor and magnet, D. Hedin, 1/15/86.
- 362 Muon trigger studies, D. Hedin, 4/2/86.
- 402 Long-lived heavy particles in D0, D. Hedin, 6/10/86.
- 527 Muon Physics at Low Angles, D. Hedin, 3/13/87.
- 574 Measuring CP-Violation at D0, D. Hedin, 6/20/87.
- 599 Graphics for ISAJET, D. Hedin and T. Kramer, 9/15/87.
- 611 User's Manual for the CALIB Program, D. Hedin et al., 9/18/87.
- 618 B Physics in D0 Transparencies, D. Hedin - 9/18/87.
- 666 B-Physics at D0 I: Muon Rates and Distributions and  $B \rightarrow \psi K_s$  Study, D. Hedin, 2/9/88.
- 742 B-Physics Possibilities at D0, D. Hedin, 8/7/88.
- 809 Random Cosmic Rates in D0, D. Hedin and B. Drendel, 2/18/89.
- 828 B-Physics Possibilities at D0, D. Hedin, 3/89.
- 889 Tagging Top using B goes to  $\mu$  Decays, D. Hedin, 9/1/89.
- 890 Muon Trigger Update, D. Hedin and M. Fortner, 9/15/89.
- 993 Triggering on B's at D0, D. Hedin, 7/31/90.
- 1018 The Performance and Physics Potential of the D0 Detector Operating at the SSC, M. Fortner, D. Hedin, et al., 10/10/90.
- 1054 The VME-based D0 Muon Trigger Electronics, M. Fortner et al., 11/14/90.
- 1117 Triggering Issues at the D0 Upgrade, D. Hedin, 04/01/91.
- 1190 Summary of the Top to Dilepton Working Group, McPhysics Workshop II, D. Hedin, 9/12/91.
- 1197 Extraction on  $Z \rightarrow \mu\mu$  and  $W \rightarrow \mu$  signals from the Blind Sample, McPhysics Workshop II, D. Hedin, 9/12/91.
- 1231 B-Physics Triggers, Triggerfest, D. Hedin, 10/1/91.
- 1325 D0 Muon Level 2 Filter, T. Diehl and D. Hedin, 1/17/92.
- 1337 Triggerfest 2: Level 2 Muon Simulation, D. Hedin, 1/20/92.
- 1488 The D0 Muon System and Early Results on its Performance, submitted to the proceedings of the ICHEP Conference, Dallas, TX 1992, D. Hedin, 10/1/92.
- 1738 Preliminary D0 Punchthrough Rates, D. Hedin, 6/5/93.
- 2113 Possible Muon Acceptances in Run II, D. Hedin and K. Johns, 5/25/94.

- 2127 Muon Wide Angle Chamber Efficiencies in Run Ia, D. Hedin, P. Quintas and D. Wood, 5/6/94.
- 2140 Muon Momentum Resolution, J. Green, D. Hedin, R. Markeloff, et al., 10/94.
- 2265 B-Physics Results from D0, D. Hedin and L. Markosky, 9/30/94.
- 2486 Level 2 trigger and off-line track reconstruction in the SAMUS spectrometer, D. Hedin et al., 3/2/95.
- 2633 Muon Wide Angle Chamber Efficiencies in Run Ib, D. Hedin, 7/95.
- 2716 Run Ib Muon Event Scanning, D. Hedin, T. Lagger, C. Nicholson, 9/95.
- 2757 Muon Identification in the Overlap Region, D. Hedin, 10/95.
- 2780 D0 Muon Upgrade, J.M. Butler, et al., 2/96.
- 2908 Implementation of D0FIX for SAMUS, D. Denisov, et al., 5/96.
- 2951 Studies of Jet-Jet Masses with two b-tagged jets with the D0 Detector, D. Hedin, et al., 5/96.
- 2967 Studies of Muon Scintillator using Dimuon Data, D. Hedin, 6/96.
- 2968 Studies of  $Z \rightarrow b\bar{b}$  Mass resolution, D. Hedin, 7/96.
- 3089 Dimuon Asymmetry Study Summary, D. Hedin and D. Fein, 10/96.
- 3106 Limits on the Production of ZX and Third Generation Leptoquark using Dimuon Events, D. Hedin and V. Sirotenko, 10/96.
- 3175 Limits on the Production of Pair Produced Third Generation Leptoquark and ZX Events, D. Hedin and V. Sirotenko, 6/97.
- 3237 Technical Design Report for the D0 forward trigger scintillation counters, V. Abramov, et al. 11/97.
- 3327 Search for Higgs in the  $ZH \rightarrow \nu\nu b\bar{b}$  channel in Run II: Trigger Study I, D. Hedin and V. Sirotenko, 10/97.
- 3365 Design of the Central Muon System, B. Baldin, et al. 11/97.
- 3410 The D0 Detector at TeV33, B. Abbott et al., 4/98.
- 3519 Search for Higgs in the  $ZH \rightarrow \nu\nu b\bar{b}$  channel in Run II: Analysis Study I, D. Hedin and V. Sirotenko, October, 1998.
- 3588 Search for Sbottom production, D. Hedin and V. Sirotenko, January, 1999.
- 3642 Central Muon Upgrade Scintillator Front-End Crate Addresses, H.T. Diehl, A. Ito, H. Mao, E. Podschweit, D. Hedin, May, 1999.
- 3950 Tuning of Run II PDT  $\Delta T$  Measurements, D. Hedin, March, 2002.
- 4059 Status of the Fast Simulation PMCS, G. Graham et al, December, 2002.
- 4201 Central Muon Scintillator Time of Flight Corrections, S. Doulas, M. Eads, D. Hedin, and A. Ito, October, 2004 (final).
- 4746 A Search for Charged Massive Stable Particles at D0, M. Eads and D. Hedin, March, 2005 (conference note).
- 4747 A Search for Charged Massive Stable Particles at D0, M. Eads and D. Hedin, March, 2005.
- 4965 A Search for Charged Massive Stable Particles at D0, M. Eads and D. Hedin, December, 2005.
- 5018 Search for Third Generation Leptoquarks in the b-Jets plus mEt Channel, A. Maciel, S. Uzunyan, A. Zatserklyaniy and D. Hedin, March, 2006.
- 5176 Search for Third Generation Leptoquarks in the  $p\bar{p}$  Collisions at  $\sqrt{s} = 1.96$  TeV, A. Maciel, S. Uzunyan, A. Zatserklyaniy and D. Hedin, July, 2006.
- 5637 Search for SM Higgs Boson in the b-Jets plus etmiss Channel using Muon Tagging, Sergey Uzunyan, David Hedin, March, 2008.
- 5781 Testing the impact of PDT firmware changes on the muon reconstruction, M. Eads, D. Hedin, P. Kasper, and Yu. Yatsunencko, October, 2008.
- 5824 Muon ID Certification for p20 data, S. W. Cho et al., December 2008.

5905. A search for excess dimuon production in the radial region  $1.6 < r < 10$  cm at the D0 experiment, M. Williams and D. Hedin, April, 2009 (conference note).
- 5925 Search for Third Generation Leptoquarks and Scalar Bottom Quarks in  $p\bar{p}$  collisions at  $\sqrt{s} = 1.96$  TeV, D. Hedin and S. Uzunyan, July, 2009
47. Search for Third Generation Leptoquarks and Scalar Bottom Quarks in  $p\bar{p}$  collisions at  $\sqrt{s} = 1.96$  TeV, The D0 Collaboration, D. Hedin and S. Uzunyan, July, 2009 (conference note).

#### High Energy Physics Community Service

1. A coordinator of the Data Filtering/Acquisition group at the November 1985 Fermilab workshop;
2. Co-leader of the muon detector group at the 1986 Snowmass workshop
3. Co-leader of the B physics and D0 upgrade working groups at the 1989 Breckenridge workshop of physics at Fermilab in the 1990s.
4. Co-leader of the muon group at the 1990 Tucson Workshop on Major SSC Detectors.
5. Co-leader of the SSC specialized detector working group at the 1990 Snowmass workshop.
6. Co-leader of the muon working group at the 1993 Snowmass workshop on B physics at hadron accelerators.
7. External reviewer, the PHENIX detector, Brookhaven National Laboratory, 1993.
8. External reviewer, the PHENIX detector, Brookhaven National Laboratory, 1996.
9. Chair, D0 Speakers Bureau, 2000-2002.
- 10 Member, local organizing committee, D0 summer workshop, NIU, 2000.
11. Member, local organizing committee, LCWS08, Linear Collider Workshop, UIC, November, 2008.
- 12 Member, local organizing committee, D0 summer workshop, FNAL, 2009.

#### External Funding

1. Studies of High Energy Phenomena Using Muons, Fermilab, \$94,000, 4/87 - 2/90; for support of students.
2. Studies of High Energy Phenomena Using Muons, Department of Energy, \$480,000, 7/87 - 6/90.
3. Studies of High Energy Phenomena Using Muons, Fermilab, \$22,091, 8/88 - 8/89.
4. Studies of High Energy Phenomena Using Muons, Fermilab, \$44,720, 11/88 - 9/92.
5. Studies of High Energy Phenomena Using Muons, Department of Energy, \$99,500, 12/89 - 6/90.
6. Studies of High Energy Phenomena Using Muons, Fermilab, \$46,000, 2/90 - 9/92; for support of students.
7. Studies of High Energy Phenomena Using Muons, Department of Energy, \$713,000, 7/90 - 6/93.
8. Studies of High Energy Phenomena Using Muons, Department of Energy, \$3,864, 4/91, surplus equipment.
9. Texas National Research Laboratory Commission, \$134,565, 4/91 - 3/94, NIU portion of proposal with Chicago, Michigan and Wisconsin.
10. Studies of High Energy Phenomena Using Muons, Department of Energy, \$52,072, 2/92 - 3/92.
11. Studies of High Energy Phenomena Using Muons, Department of Energy, \$111,455, 5/92, surplus equipment.

12. Studies of High Energy Phenomena Using Muons, Fermilab, \$94,000, 10/92 - 3/98, for support of students.
  13. Studies of High Energy Phenomena Using Muons, Department of Energy, \$503,013, 7/93 - 10/95.
  14. Studies of High Energy Phenomena using Muons, National Science Foundation, \$616,886, 6/95 - 5/98.
  15. Trigger Development, Fermilab, \$128,000, 2/98-9/98.
  16. Studies of High Energy Phenomena using Muons, National Science Foundation, \$640,000, 7/98 - 6/01.
  17. Detector Upgrade, Fermilab, \$58,000, 3/99-9/00, for support of students.
  18. Muon Collider R&D, NSF (through IIT), \$100,306, 6/00-10/03.
  19. Accelerator R&D at Fermilab, Technology Challenge Grant, \$97,983, 6/00-5/02.
  20. Accelerator R&D at Fermilab, HECA (State of Illinois), \$1,783,000, 8/00-8/04.
  21. Davis Hall Telescope Replacement, NIU Foundation, DeKalb County Community Foundation and Lake County Astronomical Society, \$10,000, \$1,000 and \$250, 11/0 - 5/01.
  22. Studies of High Energy Phenomena using Muons, National Science Foundation, \$412,000, 8/01 - 7/03.
  23. Searches for New Phenomena with High Energy Particle Colliders, \$639,000, National Science Foundation, 8/03 - 7/06.
  24. R&D on Cooling of Intense Muon Beams, \$75,000, IIT subcontract from Cornell subcontract from NSF grant, 6/02-8/05.
  25. Search for Second Generation Leptoquarks using Advanced Data Analysis Methods in Particle Physics Research, \$60,000, NSF, 8/03-7/07.
  26. Physics Outreach during the World year in Physics, NIU Foundation, \$5,000, 2005.
  27. Searches for New Phenomena with High Energy Particle Colliders, \$785,440, National Science Foundation, 8/06 - 7/09.
  28. Appointment for Andriy Zatserklyaniy, \$36,623, Fermilab, 7/06 - 3/07.
  29. Physics Outreach, \$1,000, DeKalb County Community Foundation, 5/07 - 4/08.
  30. Summer support for Lei Feng, \$5,782, Fermilab, 5/07 - 8/07.
  31. Minerva experiment, \$15,120, Fermilab, 9/07 - 9/08.
  32. Appointment for Jeffrey Hill, \$18,144, Fermilab, 9/08 - 5/09.
  33. Appointment for R. Kathwinda, \$22,211, Fermilab, 9/08 - 8/09.
  34. Appointment for A. Dychkant, \$21,930, Fermilab, 1/09 - 12/09.
  35. Searches for New Phenomena with High Energy Particle Colliders, \$1,000,000, National Science Foundation, 8/09 - 7/12.
- total external funding: \$8,925,000.

#### Thesis Students

1. James Popp, MS, Some Aspects of a Prototype Muon Spectrometer, 1987.
2. Anshih Tseng, MS, The Performance of a Magnetic Spectrometer, 1989.
3. Peichun Lee, MS, A Measurement of the Momentum Spectrum of Cosmic Ray Muons, 1989.
4. Ed Mierkiewicz, MS, A relative measurement of the longitudinal neutron flux produced in high energy hadronic showering in iron, 1994.
5. John Yetter, MS,  $Z \rightarrow b\bar{b}$  signal extraction from QCD continuum background using jet-jet masses, 1996.
6. Jill Ziegler, MS, Testing of  $A - \phi$  scintillation counters, 1999.
7. Vandana Verma, MS, Studies of the ZH channel, 2002.

8. Cullen Nicholson, MS, galaxies and teaching astronomy, 2002.
9. Laura Layton, MS, The Davis Hall Observatory, 2005.
10. Mike Eads, PhD, A Search for Massive Stable Particles, 2005.
11. Xiaofei Song, PhD, A Search for Second Generation Leptoquarks, 2005.
12. Andriy Zatserklyaniy, PhD, A Search for Third Generation Scalar Leptoquarks, 2006.
13. Sergey Uzunyan, PhD, A Search for Charge  $1/3$  Third Generation Leptoquarks Using Muon Channels, 2006.
14. Erich Schoedl, MS, Importance of Detector Baseline Lengths for the Study of Neutrino Oscillations, 2007.
15. Alex Lee, MS, GEANT studies of scintillator cells, 2009.