

CURRICULUM VITAE - November 2022

David Hedin
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Fellow, American Physical Society

Employment

- 2015-2016 Interim Director, NICADD, Department of Physics.
- 2009- Board of Trustees Professor, Northern Illinois University.
- 2002- Distinguished Research Professor, Northern Illinois University.
- 2007-2015 Deputy Director, NICADD, Department of Physics.
- 2013-2014 Acting Director of Graduate Studies, 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 Fellow, 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.
- 1982-2019 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 and identification effort (1985-1993,1994-1997,2000-2001,2008-2013). After forming the NIU group in 1986, developed the muon analysis program; developing and testing the muon trigger and readout system; and testing muon electronic components. 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. Using Run II data, searched for new particles including long-lived massive particles, third generation leptoquarks, scalar bottom quarks, and due to an excess of dimuon events at large distance, as well as studies of dimuon charge asymmetries and $H \rightarrow ZZ$ plus ZZ both to four leptons. Insitutional Board deputy chair (2013-14) and chair (2014-).

- 1985-1993 Participated in detector design for the SSC; 1991-1993, member of the SDC collaboration primarily involved in the muon system.
- 1999-2002 Participated in muon cooling R&D for use at a possible muon collider or neutrino factory.
- 2001-2013 Participated in studies for detectors at an electron-positron linear collider (ILC) or muon collider, and in detector applications including proton tomography.
- 2011- Member, Mu2E collaboration at Fermilab; design (physics and mechanical) of muon beam stop, simulations of backgrounds, co-convenor neutron task force (2012-2018; R&D of extinction monitor; co-convenor simulation group (2018-2019). Member Executive Committee (2012-2014), Publication Board (2018-2019).
- 2012-2013 Member, g-2 collaboration at Fermilab, supervising students.

PUBLICATIONS (refereed)

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 ν_μ and ν_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 $\sqrt{s} = 1.8\text{ TeV}$, S. Abachi, et al., (The D0 Collaboration), Phys. Rev. Lett., **72**, 2138 (1994).
32. Rapidity Gaps between Jets in $p\bar{p}$ Collisions at $\sqrt{s} = 1.8\text{ TeV}$, 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 $\sqrt{s} = 1.8\text{ TeV}$, 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 μ and b-quark Production Cross Sections in $p\bar{p}$ Collisions at $\sqrt{s} = 1.8\text{ TeV}$, 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).
41. Transverse Energy Distributions within Jets in $p\bar{p}$ Collisions at $\sqrt{s} = 1.8$ TeV, S. Abachi, et al., (The D0 Collaboration), Phys. Lett. B, **357**, 500 (1995).
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).
45. Second generation leptoquark search in $p\bar{p}$ collisions at $\sqrt{s} = 1.8$ TeV, S. Abachi, et al., (The D0 Collaboration), Phys. Rev. Lett., **75**, 3618 (1995).
46. Jet Production via Strongly-Interacting Color-Singlet Exchange in $p\bar{p}$ Collisions, S. Abachi, et al., (The D0 Collaboration), Phys. Rev. Lett. **76**, 734 (1996).
47. J/ψ Production in $p\bar{p}$ Collisions at $\sqrt{s} = 1.8$ TeV, S. Abachi, et al., (The D0 Collaboration), Physics Letters B, **370**, 239 (1996).
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49. Search for W_1Z_2 Production via Tripleton Final States in $p\bar{p}$ Collisions at $\sqrt{s} = 1.8$ TeV, S. Abachi, et al., (The D0 Collaboration), Phys. Rev. Lett., **76**, 2228 (1996).
50. Search for Right-handed W Bosons and Heavy W' in $p\bar{p}$ Collisions at $\sqrt{s} = 1.8$ TeV, S. Abachi, et al., (The D0 Collaboration), Phys. Rev. Lett., **76**, 3271 (1996).
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 $p\bar{p} \rightarrow e\nu jjX$ Events at $\sqrt{s} = 1.8$ TeV, B. Abbott, et al., (The D0 Collaboration), Phys. Rev. Lett., **79**, 1441 (1997).
64. Studies of Gauge Boson Pair Production and Trilinear Couplings, S. Abachi, et al., (The D0 Collaboration), Phys. Rev. D, **56**, 6742 (1997).
65. Search for Scalar Leptoquark Pairs Decaying to Electrons and Jets in $p\bar{p}$ Collisions, B. Abbott, et al., (The D0 Collaboration), Phys. Rev. Lett., **79**, 4321 (1997).
66. Scintillation Counters for the D0 Muon Upgrade, B.S. Acharya, et al., Nucl. Instr. and Methods A **401**, 45 (1997).
67. Color Coherent Radiation in Multijet Events from $p\bar{p}$ Collisions at $\sqrt{s} = 1.8$ TeV, B. Abbott, et al., (The D0 Collaboration), Physics Letters **B414**, 419 (1997).
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).
76. Search for $b \rightarrow X_s \mu\mu$ and $B^0 \rightarrow \mu\mu$ Decays, B. Abbott, et al., (The D0 Collaboration), Phys. Lett. **B423**, 419 (1998).
77. Measurement of the Shape of the Transverse Momentum Distribution of W Bosons Produced in $p\bar{p}$ Collisions at $\sqrt{s} = 1.8$ TeV, B. Abbott, et al., (The D0 Collaboration), Phys. Rev. Lett., **80**, 5498 (1998).
78. Determination of the mass of the W boson using the D0 detector at the Fermilab Tevatron, B. Abbott, et al., (The D0 Collaboration), Phys. Rev. D **58**, 12002 (1998).
79. Search for charge-1/3 third-generation leptoquark in $p\bar{p}$ collisions at $\sqrt{s} = 1.8$ TeV, B. Abbott, et al., (The D0 Collaboration), Phys. Rev. Lett., **81**, 38 (1998).
80. Search for Heavy Pointlike Dirac Monopoles, B. Abbott, et al., (The D0 Collaboration), Phys. Rev. Lett., **81**, 524 (1998).
81. Limits on anomalous $WW\gamma$ and WWZ couplings, B. Abbott, et al., (The D0 Collaboration), Phys. Rev. D. **58**, 31102 (1998).
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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).
85. Probing Hard Color-Singlet Exchange in $p\bar{p}$ Collisions at $\sqrt{s} = 630$ GeV and 1800 GeV, B. Abbott, et al., (The D0 Collaboration), Phys. Lett. B **440**, 189 (1998).
86. Forward muon system for the D0 detector upgrade, V. Abramov et al., NIM **A419**, 660 (1998).
87. Search for Squarks and Gluinos in Single-Photon Events with Jets and Large Missing Transverse Energy in $p\bar{p}$ Collisions at $\sqrt{s} = 1.8$ TeV, B. Abbott, et al., (The D0 Collaboration), Phys. Rev. Lett., **82**, 29 (1999).

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95. Measurement of the top quark pair production in $p\bar{p}$ collisions using multijet final states, B. Abbott, et al., (The D0 Collaboration), PRD **60**, 012001 (1999).
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97. Measurement of the Top Quark Mass in the Dilepton Channel, B. Abbott, et al., (The D0 Collaboration), PRD **60**, 052001 (1999).
98. Measurement of the W and Z boson production cross sections in $p\bar{p}$ Collisions at $\sqrt{s} = 1.8$ TeV, B. Abbott, et al., (The D0 Collaboration), PRD **60**, 052003 (1999).
99. Measurement of the top quark pair production cross section using the all jets decay channel, B. Abbott, et al., (The D0 Collaboration), Phys. Rev. Lett., **83**, 1908 (1999).
100. Studies of WW and WZ Production and Limits on Anomalous $WW\gamma$ and WWZ couplings, B. Abbott, et al., (The D0 Collaboration), PRD **60**, 072002 (1999).
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105. Fast scintillation counters for the D0 muon system upgrade, V. Abramov et al., IEEE Transactions of Nuclear Science, **46**, 865 (1999).
106. Measurement of the Inclusive Differential Cross Section for Z Bosons as a Function of Transverse Momentum in $p\bar{p}$ Collisions at 1.8 TeV, B. Abbott, et al., (The D0 Collaboration), Phys. Rev. D, **61**, 032004 (2000).
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57. D0 Note 3950, Tuning of Run II PDT ΔT Measurements, D. Hedin, March, 2002.
58. D0 Note 4059, Status of the Fast Simulation PMCS, G. Graham et al, December, 2002.
59. D0 Note 4201, Central Muon Scintillator Time of Flight Corrections, S. Doulas, M. Eads, D. Hedin, and A. Ito, October, 2004 (final).
60. D0 Note 4746, A Search for Charged Massive Stable Particles at D0, M. Eads and D. Hedin, March, 2005 (conference note).
61. D0 Note 4747, A Search for Charged Massive Stable Particles at D0, M. Eads and D. Hedin, March, 2005.
62. D0 Note 4965, A Search for Charged Massive Stable Particles at D0, M. Eads and D. Hedin, December, 2005.
63. D0 Note 5018, Search for Third Generation Leptoquarks in the b-Jets plus mEt Channel, A. Maciel, S. Uzunyan, A. Zatserklyaniy and D. Hedin, March, 2006.
64. D0 Note 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.
65. D0 Note 5637, Search for SM Higgs Boson in the b-Jets plus etmiss Channel using Muon Tagging, Sergey Uzunyan, David Hedin, March, 2008.
66. D0 Note 5781, Testing the impact of PDT firmware changes on the muon reconstruction, M. Eads, D. Hedin, P. Kasper, and Yu. Yatsunenko, October, 2008.
67. D0 Note 5824, Muon ID Certification for p20 data, S. W. Cho et al., December 2008.
68. D0 Note 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).
69. D0 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
70. D0 Note 5931, 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).
71. D0 Note 5998, Run IIb Local Muon Momentum Resolution, D. Hedin, October, 2009.
72. D0 Note 6025, Muon Identification Certification for the Summer 2009 Extended Dataset (Run IIb-1 and -2), O. Brandt et al., 2010.
73. D0 Note 6136, Local muon momentum resolution and energy loss corrections, D. Hedin, 2011.
74. D0 Note 6190, Muon Momentum Oversmearing Update for Run IIa, Run IIb2 and Run IIb3 Data Taking Epochs and Monte Carlo p17 and p20, A. Santos et al., 2011.
75. D0 Note 6312, IIb3 and IIb4 Muon Smearing and Resolution, L. Feng, A. Santos, O. Brandt, D. Hedin, 2012.
76. D0 Note 6314, Muon Momentum Oversmearing Update for Run IIb1 and Run IIb2 Data Taking Epochs and Run IIb2 Monte Carlo, L. Feng, A. Santos, O. Brandt, D. Hedin, 2012.
77. D0 Note 6326, Muon identification certification and treatment of systematic uncertainties for the Run IIb dataset, O. Brandt, S. Cho, D. Hedin, 2012.
78. D0 Note 6350, Updated measurement of the $p\bar{p} \rightarrow Z/\gamma Z/\gamma$ cross section, L. Feng, D. Hedin, R. Hooper, J. Krause, D. Menezes, 2012.
79. D0 Note 6372, Updated measurement of the ZZ production cross section using 10.4 fb^{-1} of $p\bar{p}$ collisions at $\sqrt{s} = 1.96$ TeV, L. Feng, D. Hedin, R. Hooper, J. Krause, D. Menezes, 2012 (conference note).

Posters, Conference, Workshop and Seminar Talks: Scientific Venues

1. A New Measurement of the $K_L \rightarrow \gamma\gamma$ Branching Ratio, D. Hedin, paper presented at the American Physical Society meeting, Washington, April (1980).
2. A Measurement of the Rate of pi-mu Atom Formation in K_L Decays, seminar presented at Brookhaven National Laboratory, April (1980).

3. A Measurement of the Rate of pi-mu Atom Formation in K_L Decays, seminar presented at Cornell University, April (1980).
4. Neutral Currents at Brookhaven, seminar given to the Physics Department, SUNY-Stony Brook, April (1984).
5. Elastic Scattering of Neutrinos and Antineutrinos by Electrons, L.A. Ahrens, et al., invited talk presented by D. Hedin, European Physical Society Conference, Bari, Italy, July 1985.
6. Muon Group Status Report, talk presented at the D0 Summer Workshop, Brookhaven, August 1985.
7. Neutral Currents at Brookhaven, seminar given to the Physics Department, UC-San Diego, October (1985).
8. Neutral Currents at Brookhaven, colloquium given to the Physics Department, SUNY-Stony Brook, November (1985).
9. Neutral Currents at Brookhaven, seminar given to the Physics Department, Univ. of Massachusetts, March (1986).
10. Neutral Currents at Brookhaven, colloquium given to the Physics Department, NIU, October (1986).
11. D0 Muon Group Status Report, seminar given to the Physics Department, Purdue University, March, 1987.
12. Muon Physics at Low Angles, seminar given at Fermilab, March, 1987.
13. Preliminary Report of the New W and Z Working Group, D. Hedin, invited talk presented at the workshop on Detectors for the Supercollider, Berkeley, 1987.
14. D0 Muon Group Status Report, seminar given to the Physics Department, Indiana University, October, 1987.
15. Physics at 2 TeV: An Experimentalist's Perspective, colloquium given to the Physics Department, NIU, January, 1988.
16. Physics at 2 TeV: An Experimentalist's Perspective, talk given to the Society of Physics Students, Michigan Technological University, May, 1988.
17. B-Physics Possibilities at D0, seminar given to the Physics Department, Michigan State University, May, 1988.
18. B-Physics Possibilities at D0, D. Hedin, invited talk presented at the 5th INFN Eloisatron Project Workshop on "Heavy Flavour Physics", Erice, Italy, June 1988.
19. D0 Muon Group Status Report, seminar given to the Physics Department, SUNY-Stony Brook, December, 1988.
20. B-Physics Possibilities at D0, seminar given at Fermilab, March, 1989.
21. Physics at 2 TeV: An Experimentalist's Perspective, colloquium given to the Physics Department, Illinois State University, March, 1989.
22. Some SSC Muon Detector Issues, invited talk given at the Workshop on Major SSC Detectors, Tucson, February 1990.
23. Muon Identification at D0, talk given at the D0 Winter Workshop, LBL, January 1991.
24. B-physics Status Report, talk given at the D0 Winter Workshop, LBL, January 1991.
25. Top to Dilepton Status Report, talk given at the D0 Winter Workshop, LBL, January 1991.
26. W and Z decays to Muons, talk given at the D0 Monte Carlo Workshop, Fermilab, October 1991.
27. The D0 Muon System and Early Results on Dimuon Production, D. Hedin, invited talk given at the XXVI International Confernece on High Energy Physiscs, Dallas, August, 1992.
28. Muon Identification in Top Decays, talk given at the D0 Top Workshop, DeKalb, February 1992.
29. Searching for the Top Quark colloquium given to the Physics Department, NIU, March 1993.
30. Muon Identification Status, talk given at the D0 Summer Workshop, Stony Brook, June 1993.
31. The D0 Muon System, D. Hedin, talk given at the Workshop on B-physics at Hadron Accelerators, Snowmass, Co., June, 1993.

32. Measurement of the B-quark Production Cross Section at D0, D. Hedin, invited talk given at the XXVII International Conference on High Energy Physics, Glasgow, July, 1994.
33. Muon Identification at D0, talk given at the D0 Summer Workshop, Ann Arbor, June 1995.
34. B-physics Triggers, talk given at the D0 Summer Workshop, Ann Arbor, June 1995.
35. Discovery of the the Top Quark, colloquium given to the Physics Department, NIU, February 1996.
36. 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.
37. Studies of Jet-Jet Masses with Two B-Tagged Jets with the D0 Detector, D. Hedin, talk given at the D0 Workshop, Northeastern University, June, 1996.
38. 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.
39. 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.
40. Leptoquark Results from D0, D. Hedin, Pheno 97:International Symposium on Recent Developments in Phenomenology, Madison, March, 1997.
41. Search for Third Generation Leptoquarks at D0, D. Hedin, American Physical Society meeting, Washington, April, 1997.
42. Status Report on Upgrade Scintillation Counters, D. Hedin, talk given at the D0 Workshop, Indiana University, July, 1997.
43. Leptoquark Searches at Fermilab, colloquium given at Illinois Institute of Technology, March, 1998.
44. Leptoquark Searches at Fermilab, invited talk given at the Latin American Symposium on High Energy Physics, San Juan, April, 1998.
45. Studies of $ZH \rightarrow \nu\nu b\bar{b}$, talk presented at the Supersymmetry/Higgs Workshop, Fermilab, May, 1998.
46. SUSY Searches at D0, invited talk given at the Division of Particles and Fields Conference, Los Angeles, January, 1999.
47. Studies of the $E_{Tmiss} + b\bar{b}$ Channel, seminar presented at the University of Arizona, March, 1999.
48. The D0 Muon System and Identification for the next 4 fb^{-1} , D0 Summer Workshop, Prague, August, 2008.
49. Recent Results from D0, Physics Department colloquium, NIU, September, 2008.
50. Status of Tevatron Searches Beyond the Standard Model, invited talk, APS meeting, Denver, May, 2009.
51. Proposed Modifications to Muon Identification, D0 Summer Workshop, Fermilab, June, 2009.
52. Muon ID news and Local muon momentum resolution studies, D0 Summer Workshop, Marseilles, August, 2010.
53. Understanding Our Asymmetric Universe, physics department colloquium, NIU, 2010.
54. Muon ID status report, D0 Summer Workshop, University of Lancaster, July, 2012.
55. Study of Neutron Rates at the CRV for 1 and 3 GeV Proton Beams, talk presented at the Community Summer Study 2013 Workshop, Minneapolis, August 1, 2013.
56. Studies of radiation damage in silicon photo-multipliers (SiPMs) for the Mu2e cosmic ray veto system, K. Francis (presenter), S. Uzunyan, G. Blazey, A. Dyshkant, D. Hedin, J. Kalnins, V. Zutshi, S. Hansen, P. Rubinov, poster presented at ICHEP 2016, Chicago, August, 2016.
56. Studies of radiation damage in silicon photo-multipliers, S. Uzunyan (presenter), G. Blazey, A. Dyshkant, K. Francis, D. Hedin, J. Kalnins, V. Zutshi, S. Hansen, P. Rubinov, E.C. Dukes, Y. Oksuzian, poster presented at APS Division of Particles and Fields, Fermilab, August 2017.

Talks at Community (non-Scientific) Venues

1. Undergraduate Participation in High Energy Physics Research, D. Hedin, paper presented at the meeting of the Illinois Section of the American Association of Physics Teachers, Bradley University, October 1988.
2. NIU Physics Outreach Program, Illinois Deans' Meeting, NIU, October, 2001.
3. Einstein's 1905 papers, New Ideas in Science Symposium - The World Year in Physics, NIU, February, 2005.
4. Einstein's 1905 papers, talk given at the NIU Notables Brown Bag Lecture Series, April, 2005.
5. Presentation on physics outreach activities, DeKalb Kiwanis luncheon, May, 2007 (with P. Sievert).
6. How our view of the Universe can change, New Ideas in Science: Galileo Conference, NIU, February, 2009.
7. Particles we take for granted, Midwest Museum of Natural Science, March, 2009.
8. Particles and forces we take for granted, NIU Notables series, NIU Lifelong Learning Institute, March, 2009.
9. Quark Mixing and Neutrino Oscillations or Where did all the Matter come from?, Quarknet Summer Institute, NIU, 2010.
10. Understanding Our Asymmetric Universe, Quarknet Summer Institute, NIU, 2012.
11. Understanding Our Asymmetric Universe, BOT Lecture, NIU, October, 2013.
12. Understanding Our Asymmetric Universe, talk presented to the Friends of the NIU Library, October 15, 2013.
13. Ten Awesome Things You Didn't Know About Astronmoy, lecture, School of Music, NIU, November, 2013.
14. Exoplanets, talk presented at STEMcafe event, Kuipers Orchard, August, 2014.
15. Understanding Our Asymmetric Universe, talk presented to the NIU Lifetime Learning Institute, March, 2015.
16. Understanding Our Asymmetric Universe, BOT Lecture, NIU, March, 2018.

Mu2E Notes (internal)

- Most of these are 15 minute presentations at internal group meetings.
- 1833, 1860: Muon beam stop simulations progress report; MBS rate studies 2 (2011).
- 1960: G4beamline studies on neutron interactions (2011).
- 2003, 2122, 2269, 2593, 2594: Muon beam stop update; Muon beam stop - SPBS studies; Muon beam stop - neutron studies; rates in the tracker from the muon beam stop; rates in the calorimeter from the MBS (2012).
- 2501: Neutron scattering in g4bl/geant4 (2012-2014).
- 2608, 2942, 2988, 3090, 3147, 3537, 3935, 4505, 5555, 5601, 5624, 5668, 5722, 5732, 5770, 5834, 5841, 5901, 5903, 6014, 6081, 6176, 6307, 6465, 6534, 6644, 6703, 6710, 6793, 6894, 7397: Interim report of the neutron Task Force (R. Coleman et al.); Inner neutron shielding studies; Gamma hit rate estimates; DS Shielding geometry 13; Neutron task force status (2013-2014).
- 2663, 2689, 2837, 3943, 4216, 3497, 5376, 5400, 5602, 7617, 7814, 8140: studies of the MBS design and physics impact (2013-2016).
- 3527, 3637, 4385, 7215: extinction monitor studies (2013-2016).
- 8222, analysis of LDRD test beam data (2016).
- 14994 G4bl Studies of MBS replacing polyethylene with polystyrene, 10625 G4bl Studies of Beam Flash and added mini-collimator, 8791 Radiative DIOs and Shielding, 8591 NE Corner Enhancement II - G4BL, 8590. Extinction Monitor Scintillation Counters, 2017.
- 15896 Extinction Monitor trigger and muID counters, 18465 Introduction to the simulation workshop, 19002 MBS design and beam flash in the calorimeter, 17697, 19354, 19630, 20149, 20787, 21492, 22103 G4beamline studies of the production target and pbar TS3 absorber, 21753, Simulations Working Group Report, 22510 CRV Shielding, 2018.

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. Chair, 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, Fermilab, 2009.
13. Chair, local organizing committee, D0 summer workshop, NIU, 2013.
14. Deputy Chair, D0 institutional board, 2013-2014.

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 Zatsklyaniy, \$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, \$87,290, Fermilab, 1/09 - 9/11.
35. Searches for New Phenomena with High Energy Particle Colliders, \$1,000,000, National Science Foundation, 8/09 - 7/12.
36. Collaborative Research: University Program of Detector Research for the ILD Detector Concept at the ILC, \$157,500, National Science Foundation, 9/09 - 8/14.
37. Simulations of Accelerator Based backgrounds in a Muon Collider, \$30,000, Muons, Inc (DOE STTR program), 7/10 - 8/11.
38. Searches for New Phenomena with High Energy Particle Colliders, \$874,000, National Science Foundation, 7/12 - 6/15.
39. Development of the MU2E Preliminary Design, \$256,989, Fermilab, 7/12 - 9/14 (PI, N. Pohlman co-PI).
40. Beam emittance measurements for muon collider R&D, \$27,126, Universities Research Association, 9/13 - 9/14 (co-PI, M.A. Cummings PI).
41. Development of the MU2E Preliminary Design, \$855,288, Fermilab, 10/14 - 12/21 (PI, N. Pohlman and V. Zutshi co-PI).
42. Support for S. Boi for Mu2e effort, \$28,535, 12/2014 - 7/2015, (PI).
42. Searching for New Phenomena with Leptons, \$880,320, National Science Foundation, 8/15 - 7/19 (co-PI, V. Zutshi PI, G. Blazey co-PI).
43. Beam Precision Time Profile Monitor, \$30,990 (NIU share of \$192,211 total), Fermilab Laboratory Directed Research and Development (LDRD) Program, 12/15 - 12/18 (co-PI, E. Prebys Fermilab PI).
44. Electrical Integration Oversight for the MU2E Project, \$112,852, Fermilab, 7/21 - 12/22 (PI, N. Pohlman and V. Zutshi co-PI).
45. Development of the MU2E Preliminary Design, \$195,320, Fermilab, 1/22 - 12/23 (PI, N. Pohlman and V. Zutshi co-PI).
- total external funding: \$12,364,000.

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.
16. Martin Braunlich, MS, D0 muon upgrade, 2010.
17. Aaron Morris, MS, Muon collider background simulations, 2011.
18. Robert Shea, MS, Studies of long scintillation counters, 2011.
19. Zachary Hodge, MS, Optimization of the muon stopping target for the Mu2E collaboration, 2013.
20. Diego Menezes, PhD, Search for the standard model Higgs Boson in the four lepton final state by the D0 experiment at Run II of the Tevatron collider, 2013.
21. Lei Feng, PhD, Measurement of the ZZ cross section in the four lepton final state by the D0 experiment at Fermilab, 2013.
22. Casey Mott, MS, Research and development of the Mu2e extinction monitor, 2016.

Undergraduate Award Students

1. James Raskowski, URAP, 1998-1999.
2. Michael Eads, URAP, 1999-2000.
3. Robert McIntosh, URAP, 2000-2001.
4. Stephen Boona, URAP, 2007-2008.
5. Joshua Hawke, URAP, 2008-2009.
6. Ivan Viti, URAP, 2009-2010.
7. Chason Zacher, Research Rookie, 2010-2011.
8. Mason Hayward, Research Rookie, 2012-2014.
9. Steven Boi, USOAR, URAP and URA, 2013-2014.
10. Ashlyn Shelitto, URA, 2013-2014.
11. Tyler Stringer, Research Rookie, 2013-2014 with L. Lurio.
12. Alison Peisker, URAP and URA, 2014-2016.
13. Dayne Coveyou, SEF, 2017.
14. Nathan Dille, SEF, 2018.

Courses Taught at NIU

1. PHYS 162, Elementary Astronomy, F90, S91, F92, F93, S94, F95, F96, S97, F97, F99, S00, F01, F03, S04, F04, S05, F11, S12, F12, S13, S14, S17, F17, S18, Su18, F18, SP19, Su19, F119, FL20.
2. PHYS 162H, Elementary Astronomy stand alone honors section, S98, F12, F13, F14, F16, F17, F18, F19.
3. PHYS 360, Modern Physics, S93, F98.
4. PHYS 385, Methods of Mathematical Physics I, S87, S88, S07.
5. PHYS 460/560, Quantum Physics, F89, F94, F00, F05, F06, F07, F08, F09, F10, F14, F15.
6. PHYS 461/561, Modern Physics, S89, S90, S95, S01, S06, S07, S08, S09, F14, S16.
7. PHYS 474, Methods of Experimental Physics, S14.
8. PHYS 477, Astrophysics, S96.

9. PHYS 485, Methods of Mathematical Physics II, F87, F88.
10. PHYS 690B/790B, Special Topics in High Energy Physics, S89, S14.
11. PHYS 499H, Senior Honors capstone project, S97, S99, F15, S16, F19.
12. UNIV 101, F15.
13. PHYS 383, Intermediate Quantum Physics, S18.