

# Curriculum Vitae Mary Hall Reno

## Contact information:

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## Education:

1985	PhD	Physics	Stanford University
1980	BA	Physics	Reed College

## Employment:

2002-present	Professor, Physics & Astronomy, University of Iowa
2009-2014	Chair, Physics & Astronomy, University of Iowa
1995-2002	Associate Professor, Physics & Astronomy, University of Iowa
1990-1995	Assistant Professor, Physics & Astronomy, University of Iowa
1988-1990	Visiting Professor, Fisica, Centro de Investigacion y Estudios Avanzados del Instituto Politecnico National (CINVESTAV, Mexico City)
1985-1988	Postdoctoral research associate, Theory Group, Fermilab

## Honors and Awards:

2010	Fellow, American Physical Society
2003-2006	Faculty scholar award, University of Iowa
1999-2001	Dean's scholar award, College of Liberal Arts, University of Iowa

Mary Hall Reno, Physics and Astronomy

## 1. Scholarship

### 1.a. Journal Articles

1. A. Bhattacharya, M. H. Reno and I. Sarcevic, "Reconciling neutrino flux from heavy dark matter decay and recent events at IceCube," arXiv:1403.1862, *Journal of High Energy Physics*, JHEP 06 (2014) 110 (15 pages).
2. Y. S. Jeong, C. S. Kim and M. H. Reno, "Color dipole cross section and deep inelastic structure functions," arXiv:1403.2551 (7 pages), submitted to *Physical Review D*.
3. T. Guver, A. E. Erkoca, M. H. Reno and I. Sarcevic, "On the capture of dark matter by neutron stars," arXiv:1201.2400[hep-ph], *Journal of Cosmology and Astroparticle Physics*, JCAP 05 (2014) 013 (23 pages).
4. Y. S. Jeong, C. S. Kim and M. H. Reno, "Majorana dark matter cross sections with nucleons at high energies," arXiv:1207.1526[hep-ph] (6 pages), *Physical Review D* 86 (2012) 094025.
5. Y. S. Jeong, M. H. Reno and I. Sarcevic, "Radio Cherenkov signals from the Moon: Neutrinos and cosmic rays," *Astroparticle Physics* 35 (2012) 383 (13 pages)
6. A. E. Erkoca, M. H. Reno and I. Sarcevic, "Probing dark matter models with neutrinos from the Galactic center," *Physical Review D* 82 (2010) 113006 (20 pages)
7. A. Bulmahn and M. H. Reno, "Secondary atmospheric tau neutrino production," *Physical Review D* 82 (2010) 057302 (4 pages)
8. Y. S. Jeong and M. H. Reno, "Tau neutrino and antineutrino cross sections," *Physical Review D* 82 (2010) 033010 (6 pages)
9. A. E. Erkoca, G. Gelmini, M. H. Reno and I. Sarcevic, "Muon fluxes and showers from dark matter annihilation in the Galactic center," *Physical Review D* 81 (2010) 096007 (13 pages)
10. Y. S. Jeong and M. H. Reno, "Quark mass effects in the high energy neutrino nucleon cross section," *Physical Review D* 81 (2010) 114012 (8 pages)
11. A. Bulmahn and M. H. Reno, "High energy leptons form muons in transit," *Physical Review D* 81 (2010) 053003 (11 pages)
12. A. E. Erkoca, M. H. Reno and I. Sarcevic, "Muon fluxes from dark matter annihilation," *Physical Review D* 80 (2009) 043514 (11 pages)

13. A. Bulmahn and M. H. Reno, "Cross sections and energy loss for lepton pair production in muon transport," *Physical Review D* 79 (2009) 053008 (8 pages)
14. R. Enberg, M. H. Reno and I. Sarcevic, "High energy neutrinos from charm in astrophysical sources," *Physical Review D* 79 (2009) 053006 (6 pages)
15. R. Enberg, M.H. Reno and I. Sarcevic, "Prompt neutrino fluxes from atmospheric charm," *Physical Review D* (2008) 043005 (13 pages) [50+ citations]
16. I. Schienbein ... M.H. Reno ... et al, "A review of target mass corrections," *Journal of Physics G* 35 (2008) 053101 (32 pages) [50+ citations]
17. M. H. Reno, I. Sarcevic and J. Uscinski, "Cosmogenic neutrinos and quasi-stable supersymmetric particles," *Physical Review D* 76 (2007) 125030 (11 pages)
18. Y. Huang, M. H. Reno, I. Sarcevic and J. Uscinski, "Weak interactions of supersymmetric taus at high energies," *Physical Review D* 74 (2006) 115009 (7 pages)
19. M. H. Reno, "Electromagnetic structure functions and neutrino nucleon scattering," *Physical Review D* 74 (2006) 033001 (8 pages)
20. S. I. Dutta, Y. Huang and M. H. Reno, "Tau neutrino propagation and tau energy loss," *Physical Review D* 72 (2005) 013005 (10 pages)
21. M. H. Reno, I. Sarcevic and S. Su, "Propagation of supersymmetric charged sleptons at high energies," *Astroparticle Physics* 24 (2005) 107 (9 pages).
22. S. Kretzer, F. Olness, J. Pumplin, D. Stump, W.-K. Tung and M. H. Reno, "The parton structure of the nucleon and precision determination of the Weinberg angle in neutrino scattering," *Physical Review Letters* 93 (2004) 041802 (4 pages).[50+ citations]
23. J. Jones, I. Mocioiu, M. H. Reno and I. Sarcevic, "Tracing very high energy neutrinos from cosmological distances in ice," *Physical Review D* 69 (2004) 033004 (12 pages)
24. S. Kretzer and M. H. Reno, "Target mass corrections to electro-weak structure functions and perturbative neutrino cross sections," *Physical Review D* 69 (2004) 034002 (14 pages)
25. S. Kretzer and M. H. Reno, "Tau neutrino deep inelastic charged current interactions," *Physical Review D* 66 (2002) 113007 (12 pages)
26. S. Iyer Dutta, M. H. Reno and I. Sarcevic, "Secondary neutrinos from tau neutrino interactions in Earth," *Physical Review D* 66 (2002) 077302 (4 pages).

27. S. Iyer Dutta, M. H. Reno and I. Sarcevic, "On black hole detection with the OWL/Airwatch telescope," *Physical Review D* 66 (2002) 033002 (6 pages). [50+ citations]
28. S. Iyer Dutta, M. H. Reno and I. Sarcevic, "High-energy signals of four neutrino mixing," *Physical Review D* 64 (2001) 113015 (7 pages).
29. S. Iyer Dutta, M. H. Reno, I. Sarcevic and D. Seckel, "Propagation of muons and taus at high energies," *Physical Review D* 63 (2001) 094020 (10 pages). [100+ citations]
30. S. Iyer Dutta, M. H. Reno and I. Sarcevic, "Tau neutrinos underground: Signals of  $\nu_\mu \rightarrow \nu_\tau$  oscillations with extragalactic neutrinos," *Physical Review D* 62 (2000) 123001 (20 pages). Also contributed paper to Neutrino 2000, Sudbury, Canada, June 2000. [50+ citations]
31. S. Iyer, M. H. Reno and I. Sarcevic, "Searching for  $\nu_\mu \rightarrow \nu_\tau$  oscillations with extragalactic neutrinos," *Physical Review D* 61 (2000) 053003 (4 pages)
32. L. Pasquali and M. H. Reno, "Tau neutrino fluxes from atmospheric charm," *Physical Review D* 59 (1999) 093003 (4 pages). [50+ citations]
33. L. Pasquali, M. H. Reno and I. Sarcevic, "Lepton fluxes from atmospheric charm," *Physical Review D* 59 (1999) 034020 (10 pages). [50+ citations]
34. R. Gandhi, C. Quigg, M. H. Reno and I. Sarcevic, "Neutrino interactions at ultrahigh energies," *Physical Review D* 58 (1998) 093009 (15 pages). [400+ citations]
35. H. Baer, B. W. Harris and M. H. Reno, "Next-to-leading order slepton pair production at hadron colliders," *Physical Review D* 57 (1998) 5871-5874
36. L. Pasquali, M. H. Reno and I. Sarcevic, "Secondary decays in atmospheric charm contributions to the flux of muons and muon neutrinos," *Astroparticle Physics* 9 (1998) 193-202.
37. M. J. Duncan and M. H. Reno\*, "Z polarization in the Higgs boson signal at the LHC," *Physical Review D* 56 (1997) 3129-3134.
38. H. Baer and M. H. Reno, "Multiple parton emission effects in next-to-leading-order direct photon production," *Physical Review D* 54 (1996) 2017-2022
39. R. Gandhi, C. Quigg, M. H. Reno and I. Sarcevic, "Ultrahigh Energy Neutrino Interactions," *Astroparticle Physics* 5 (1996) 81-110. [400+ citations]
40. K. R. Barger and M. H. Reno\*, "Hadron collider limits on anomalous  $WW\gamma$  couplings," *Physical Review D* 51 (1995) 90-98.
41. M. H. Reno, "Relative distributions of W's and Z's at low transverse momenta," *Physical Review D* 49 (1994) R4326-4330.

42. H. Baer, C. Chen and M. H. Reno, "An estimate of jet activity in  $t\bar{t}$  events," *Physical Review D* 48 (1993) 5168-5174.
43. H. Baer and M. H. Reno, "QCD corrections to leptonic and hadronic observables from  $p\bar{p} \rightarrow W^+X \rightarrow \bar{\nu}_\tau \nu_\tau X$ ," *Physical Review D* 47 (1993) 3906-3913.
44. K. R. Barger and M. H. Reno\*, "Theoretical uncertainties in the QCD predictions for transverse momentum distributions in  $\pi$ -nucleon production of lepton pairs," *Physical Review D* 47 (1993) 933-939.
45. H. Baer and M. H. Reno, "W and Z production at  $p\bar{p}$  colliders: parton showers merged with  $O(\alpha_s)$  Monte Carlo approach," *Physical Review D* 45 (1992) 1503-1511.
46. H. Baer and M. H. Reno, "A complete  $O(\alpha_s)$  event generator for  $p\bar{p} \rightarrow W^+X \rightarrow e^+\nu X$  with parton showering," *Physical Review D* 44 (1991) 3375-3378.
47. H. Baer and M. H. Reno, "  $O(\alpha_s)$  corrections to observables from  $p\bar{p} \rightarrow W^+X \rightarrow e^+\nu X$ ," *Physical Review D* 43 (1991) 2892-2899.
48. P. Arnold, R. K. Ellis and M. H. Reno, "High  $p_T$  W and Z production at the Fermilab Tevatron," *Physical Review D* 40 (1989) 912-913.
49. P. Arnold and M. H. Reno, "The complete computation of high- $p_T$  W and Z production in 2nd-order QCD," *Nuclear Physics B* 319 (1989) 37-71; *Errat.-ibid B* 330 (1990) 284. [200+ citations]
50. M. H. Reno and D. Seckel, "Primordial nucleosynthesis: the effects of injecting hadrons," *Physical Review D* 38 (1988) 3441-3462. [100+ citations]
51. M. H. Reno and C. Quigg, "On the detection of ultrahigh energy neutrinos," *Physical Review D* 37 (1988) 657-664. [50+ citations]
52. V. Barger, N. G. Deshpande, W.-Y. Keung, M. H. Reno and M. Ruiz-Altaba, "Signals of  $E_6$  vector leptons at the SSC," *Mod. Phys. Lett. A* 2 (1987) 437-446.
53. M. Soldate, M. H. Reno and C. T. Hill, "Nonabelian family symmetry and the origin of fermion masses and mixing angles," *Physics Letters* 179B (1986) 95-102.
54. C. Quigg, M. H. Reno and T. P. Walker, "Interactions of ultrahigh energy neutrinos," *Physical Review Letters* 57 (1986) 774-777. [50+ citations]
55. H. Haber and M. H. Reno, "Signatures of heavy neutrino production at the CERN collider," *Physical Review D* 34 (1986) 2732-2738.
56. J. Bagger, S. Dimopoulos, E. Masso' and M. H. Reno, "Experimental consequences of family unification," *Physical Review Letters* 54 (1985) 2199-2202.

57. J. Bagger, S. Dimopoulos, E. Masso' and M. H. Reno, "A realistic theory of family unification," *Nuclear Physics B* 258 (1985) 565-600. [50+ citations]
58. F. J. Gilman and M. H. Reno, "Restrictions from the neutral K and B meson systems on left-right-symmetric gauge theories," *Physical Review D* 29 (1984) 937-944. [50+ citations]
59. F. J. Gilman and M. H. Reno, "Restrictions on left-right symmetric gauge theories from the neutral kaon system and B decays," *Physics Letters* 127B (1983) 426-428.
60. R. E. Crandall and M. H. Reno\*\*, "Ground state energy bounds for potentials  $|x|^\nu$ ," *Journal of Mathematical Physics* 23 (1982) 64 (7 pages)

### 1.b. Conference Proceedings

1. M. H. Reno, "Prompt leptons from atmospheric charm production," to be published in *Proceedings of the 11<sup>th</sup> Conference on the Intersections of Particle and Nuclear Physics*, [St. Petersburg, FL, May 29-June 3, 2012] (5 pages).
2. M. H. Reno, "Neutrinos from charm production: atmospheric and astrophysical applications," in the *Proceedings of the Eleventh Workshop on Non-Perturbative QCD*, [Paris, France, June 6-10, 2011], B. Mueller, Mary Ann Rotondo and Chung-I Tan, eds., electronic publication [www.slac.stanford.edu/econf/C1106064/](http://www.slac.stanford.edu/econf/C1106064/) (10 pages).
3. M. H. Reno, "Neutrinos from dark matter," in the *Proceedings of the 12<sup>th</sup> ICATPP Conference on Astroparticle, Particle, Space Physics and Detectors for Physics Applications*, [Villa Olmo, Como, Italy, October 7-8, 2010], ed. S. Giani, C. Leroy and P. G. Rancoita (World Scientific, Singapore, 2011), 603-612 (10 pages).
4. M. H. Reno, I Sarcevic and J. Uscinski, "Weak interactions and quasi-stable particle energy loss," in the *proceedings of the 2<sup>nd</sup> Workshop on TeV Astrophysics*, [Madison, Wisconsin, August 2006] *J. Phys. Conf. Ser.* (2007) 203 (4 pages).
5. J. Jones, I. Mocioiu, I. Sarcevic and M. H. Reno, "Ultrahigh-energy tau neutrinos," in *Proceedings of the 8th Workshop on Nonperturbative QCD* [Paris, France, June 7-11, 2004] *International Journal of Modern Physics A* 20 (2005) 4656 (10 pages).
6. M. H. Reno, "Deep inelastic neutrino interactions," in *Proceedings of the 8th Workshop on Nonperturbative QCD* [Paris, France, June 7-11, 2004] *International Journal of Modern Physics A* 20 (2005) 4664 (6 pages).

7. M. H. Reno, "Neutrino cross sections at HERA and beyond," in Proceedings of the 13th International Symposium on Very High-Energy Cosmic Ray Interactions [Pylos, Greece, September 6-12, 2004] Nucl. Phys. Proc. Suppl. 151 (2006) pp 255-259
8. M. H. Reno, "High energy neutrino cross sections," in Proceedings of the 21st International Conference on Neutrino Physics and Astrophysics, [Paris, France, June 14-19, 2004] Nucl. Phys. (Proceedings Supplement) 143 (2005) pp 407-413 (7 pages).
9. S. Kretzer and M. H. Reno, " $\sigma_{\text{DIS}}(\nu N)$ , NLO perturbative QCD and  $O(1 \text{ GeV})$  mass corrections," in Proceedings of the 3rd International Workshop on Neutrino Nucleus Interactions in the Few GeV Region (NUINT04) [Assergi, Italy, March 17-21, 2004] Nucl. Phys. Proceedings Supplement 139 (2005) 134 (6 pages).
10. S. Kretzer and M. H. Reno, "Neutrino scattering in perturbative QCD and implications for the Weinberg angle," in Proceedings of the 8th Conference on the Intersections of Particle and Nuclear Physics (CIPANP 2003) [New York, May 19-24, 2003] AIP Conf. Proc. 698 (2004) pp. 165-167.
11. S. Iyer Dutta, I. Mocioiu, M. H. Reno and I. Sarcevic, "Tau neutrinos at EeV energies," in Proceedings of the 28th International Cosmic Ray Conference [Tsukuba, Japan, July 29-August 8, 2003] pp 1435-1438.
12. S. Kretzer and M. H. Reno, "Deep inelastic neutrino interactions," in Proceedings of NUINT02 [Irvine, California, December 2002].
13. S. Iyer Dutta, M. H. Reno and I. Sarcevic, "Ultrahigh energy neutrinos," in Neutrinos and Implications for Physics Beyond the Standard Model [Stony Brook, NY, October 11-13, 2002], ed. R. Shrock, World Scientific (New Jersey, 2003) pp. 339-350 and Int. J. Mod. Phys. A 18 (2003) 4085.
14. S. Iyer Dutta, M. H. Reno and I. Sarcevic, "High energy tau neutrinos," Cosmology and Elementary Particle Physics, Coral Gables Conference on Cosmology and Elementary Particle Physics [Ft. Lauderdale, FL, December 12-16, 2001], ed. B. N. Kursunoglu, S. L. Mintz and A. Perlmutter, AIP Conference Proceedings, Vol. 624, 271-279.
15. S. Iyer Dutta, M. H. Reno and I. Sarcevic, "Ultrahigh energy neutrinos in the light of SuperK," Proceedings of Snowmass 2001, The Future of Particle Physics, Snowmass, Colorado, June 30-July 21, 2001, ed. Norman Graf, SLAC-R-599 (CD publication), P403.
16. M. H. Reno, I. Sarcevic, G. Sterman, M. Stratmann and W. Vogelsang, "Ultrahigh energy neutrinos, small  $\alpha_s$  and unitarity," in Proceedings of Snowmass 2001, The Future of Particle Physics, Snowmass, Colorado,

- June 30-July 21, 2001, ed. Norman Graf, SLAC-R-599 (CD publication), P508.
17. D. Seckel, M. H. Reno, S. Iyer Dutta and I. Sarcevic, "Electromagnetic energy loss for muons and taus at high energies," in Proceedings of the 27th International Cosmic Ray Conference, Hamburg, Germany, August 7-15, 2001, pp 1046-1049.
  18. L. Pasquali, M. H. Reno and I. Sarcevic, "Neutrinos and muons from atmospheric charm," in Proceedings of the 26<sup>th</sup> International Cosmic Ray Conference, Salt Lake City, Utah, August 15-25, 1999, edited by D. Kieda, M. Salamon and B. Dingus, Vol. 2, pp 244-247.
  19. L. Pasquali, M. H. Reno and I. Sarcevic, "Atmospheric neutrinos from charm," in Proceedings of the International Workshop on Particle Physics and the Early Universe, Asilomar, Monterey, California, November 15-20, 1998, edited by D. Caldwell, pp 408-411.
  20. L. Pasquali, M. H. Reno and I. Sarcevic, "Muon and muon neutrino fluxes from atmospheric charm," in Proceedings of the Fifth International Workshop on Topics in Astroparticle and Underground Physics, Gran Sasso, Italy, September 7-11, 1997, Nuclear Physics B (Proc. Suppl.) 70 (1999) 361.
  21. R. Gandhi, C. Quigg, M. H. Reno and I. Sarcevic, "Detecting neutrinos from AGNs and topological defects with neutrino telescopes," in the Proceedings of the 1996 Annual Divisional Meeting of the Division of Particles and Fields, Minneapolis, MN, August 10-15, 1996.
  22. R. Gandhi, C. Quigg, M. H. Reno and I. Sarcevic, "Ultrahigh-Energy Neutrino Interactions and Neutrino Telescope Event Rates," in Proceedings of the International Conference on Neutrino Mass, Dark Matter and Gravitational Waves, pp. 121-130, Miami Beach, Florida, January 25-28, 1996.
  23. R. Gandhi, C. Quigg, M. H. Reno and I. Sarcevic, "Small- $x$  parton densities from HERA and neutrino telescope event rates," in Proceedings of the Fourth International Workshop on Theoretical and Phenomenological Aspects of Underground Physics, Toledo, Spain, September 17-21, 1995, Nuclear Physics Proceedings Supplement 48 (1996) 475.
  24. R. Gandhi, C. Quigg, M. H. Reno and I. Sarcevic, "Small- $x$  parton densities from HERA and the ultra-high energy neutrino-nucleon cross section," in Proceedings of the VIth Blois Workshop on Frontiers in Strong Interactions, pp. 215-219, Blois, France, June 1995.
  25. M. J. Duncan and M. H. Reno, "\$Z\$ polarization in  $pp \rightarrow ZZ \rightarrow \ell^+ \ell^- \nu \bar{\nu}$  at the LHC," in Proceedings



- of the Eighth Meeting of the Division of Particles and Fields of the American Physical Society, University of New Mexico, Albuquerque, New Mexico, August 2--6, 1994, ed. S. Seidel, p. 473-477.
26. M. J. Duncan and M. H. Reno, "Enhancing the Higgs signal in  $p\bar{p} \rightarrow ZZ \rightarrow \ell^+\ell^-\nu\bar{\nu}$ ," in the Proceedings of the Workshop on Physics at Current Accelerators and Supercolliders, Argonne National Laboratory, Argonne, Illinois, June 2--5, 1993, ed. J. L. Hewett, A. R. White and D. Zeppenfeld, p. 413-420.
  27. M. H. Reno, "The total neutrino cross section at very high energies," in Proceedings of the Workshop on High Energy Neutrino Astrophysics, University of Hawaii, Honolulu, Hawaii, March 23-26, 1992, ed. V. J. Stenger, J. G. Learned, S. Pakvasa and X. Tata, p. 211--220.
  28. M. H. Reno, "Complete  $O(\alpha_s)$  calculation of  $W$  production with parton showering," in Proceedings of the Joint International Lepton-Photon Symposium and Europhysics Conference on High Energy Physics, Geneva, Switzerland, July 25--August 1, 1991, ed. S. Hegarty, K. Potter and E. Quercigh, Vol. 1, p. 423.
  29. H. Baer and M. H. Reno, "Observables from  $p\bar{p} \rightarrow W^+X \rightarrow e^+\nu X$  beyond leading order," in Beyond the Standard Model II: Proceedings of the International Conference on High Energy Physics, Norman, Oklahoma, November 1--3, 1990, ed. K. Milton, R. Kantowski and M. A. Samuel, p. 121--123.
  30. M. H. Reno, "Introduction to Perturbative QCD," in Proceedings of the Second Workshop on Particles and Fields, *Rivista Mexicana de Fisica* 36 Suplemento 1 (1990), Puebla, Mexico, November 13--17, 1989, p. S20--S64.
  31. P. B. Arnold and M. H. Reno, "Order  $\alpha_s^2$  corrections to  $W$  and  $Z$  transverse momentum distributions at the SPS and Tevatron colliders," in Proceedings of the Seventh Topical Workshop on Proton-Antiproton Collider Physics, Batavia, Illinois, June 20--24, 1988, ed. R. Raja, A. Tollestrup and J. Yoh, p. 336--344.
  32. M. H. Reno, "Primordial nucleosynthesis: the effects of injecting hadrons," in Proceedings of the Third ESO/CERN Symposium, Astronomy, Cosmology and Fundamental Physics, Bologna, Italy, May 16--20, 1988, ed. M. Caffo, R. Fanti, G. Giacomelli and A. Renzini, p. 461-465.
  33. N. G. Deshpande, J. Gunion, D. Kosower, M. H. Reno and A. Soni, "Signals of horizontal symmetries at the SSC," in Proceedings of the 1986 Summer Study on the Physics of the Superconducting Supercollider, June 23--July 11, 1986, ed. Rene Donaldson and Jay Marx, p. 250--253.

34. V. Barger, N. G. Deshpande and J. F. Gunion, et al., "Signatures for exotic quark singlets from superstrings," in Proceedings of the 1986 Summer Study on the Physics of the Superconducting Supercollider, June 23--July 11, 1986, ed. Rene Donaldson and Jay Marx, p. 216--220.
35. V. Barger, N. G. Deshpande, W.-Y. Keung, M. H. Reno and M. Ruiz--Altaba, "Heavy vector leptons at the SSC," in Proceedings of the 1986 Summer Study on the Physics of the Superconducting Supercollider, June 23--July 11, 1986, ed. Rene Donaldson and Jay Marx, p. 221--223.

Mary Hall Reno, Physics and Astronomy

## 2. Grants and Contracts

### EXTERNAL:

- 2013 Co-Principal Investigator, "Research in Lattice Gauge Theory and in the Phenomenology of Neutrinos and Dark Matter," with Y. Meurice, May 1, 2013- March 31, 2016, \$110,000 of \$291,000 total budget.
- 2002 Co-Investigator, "Theoretical investigations in neutrino physics," part of Task D of Department of Energy contract, 2002-2012, approximately \$50,000/year through April 30, 2013.
- 2004 Principal Investigator, "REU Site: Undergraduate research in physics and astronomy at the University of Iowa," National Science Foundation, 2004-2006, \$217,613.
- 1998 Principal Investigator, "Theoretical calculations for high energy particles in the atmosphere and in underground and accelerator experiments," National Science Foundation, 1998-2002, \$78,000.
- 1995 Principal Investigator, "QCD corrections to Drell-Yan and lepton-nucleon scattering," National Science Foundation, 1993-1996, \$45,500.
- 1991 Principal Investigator, "QCD corrections to observables in W and W+gamma production," National Science Foundation, 1991-1994, \$36,500.

### INTERNAL:

- 1996 "Muons and neutrinos from atmospheric charmed particle production," CIFRE Award, 1/97-6/97, \$8,280.
- 1991 "An assessment of the feasibility of a measurement of the W magnetic moment at the Tevatron Collider," Old Gold Summer Fellowship, 7/91-8/91, \$3,500.

### OTHER GRANTS AND CONTRACTS:

- 2009 Co-Principal Investigator, "Committee on the Status of Women in Physics, APS", Elsevier Foundation New Scholars grant, 2009-2011, \$15,000 to help support childcare expenses of APS meeting attendees.
- 2012 UI PI for proposal "Iowa Regents Modeling Workshops in Physics," Contact, Jeffrey Weld, Director of Iowa Math and Science Education Partnership (IMSEP) submitted to the Carver Charitable Trust in 2010. Awarded amount \$87,225 for teacher preparation workshop at the University of Iowa (2012).

2013 PI for “Undergraduate Physics and Astronomy Laboratory Equipment Upgrades at the University of Iowa,” co-PIs Professors Robert Mutel and Frederick Skiff, Award amount \$199,460, 4/2013-4/2014.

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### 3. Lectures, Conference Presentations, Invited Talks (Selected)

#### International:

1. "Atmospheric neutrinos and leptons from charm," invited talk, Nordita Workshop, Stockholm, Sweden, at "News in Neutrino Physics," April 20-May 2, 2014
2. "Neutrino connection with cosmic ray origin," 7<sup>th</sup> International Workshop on Very High Energy Particle Astronomy, VHEPA14, Tokyo, Japan, March 19-20, 2014.
3. "Neutrinos from charm production: atmospheric and astrophysical applications," *Eleventh Workshop on Non-Perturbative QCD*, l'Institut d'Astrophysique de Paris, France, June 6-10, 2011

#### National

1. "Neutrinos from charm," Ohio State University Center for Cosmology and AstroParticle Physics, February 27-28, 2014 at workshop "Cosmic Messages in Ghostly Bottles: Astrophysical Neutrino Sources and Identification"
2. "Ultrahigh energy neutrinos: what we know and what we don't know," Aspen Center for Physics, September 12, 2013
3. "Atmospheric lepton fluxes at high energies," IceCube Particle Astrophysics Symposium, Madison, WI, 13-15 May 2013
4. "Neutron star constraints on asymmetric bosonic dark matter," April APS Meeting, Denver, CO, 13-16 April 2013 (contributed talk)
5. "The Moon as a Detector for Extreme-Energy Cosmic Rays," *Cosmic Frontier*, SLAC, Stanford, CA, 6-9 March, 2013.

#### Summer School Lectures

1. "Structure Functions: Perturbation Theory and Beyond," at the *22nd Annual Hampton University Studies Program, HUGS 2007*, Jefferson Lab, Newport News, Virginia, 5 lectures, June 6-8, 2007.

#### Public Lectures/Non-physics Audiences

1. "Math, Physics, Emmy Noether and Me," keynote talk at the Sonia Kovalevsky Day, April 5, 2014, University of Iowa.
2. "Neutrinos - faster than the speed of light?," October 20, 2011, Café Scientifique, Iowa City.
3. "Neutrinos in physics and astrophysics," October 15, 2008, in Living/Learning Community on Explorations in Science, Math and Computing, Hillcrest Dorm.
4. "Neutrinos: Messengers from the biggest explosions in the universe," May 4, 2004, Department of Physics and Astronomy, and Talk of Iowa radio call-in show.

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4. Teaching

Course assignments 2001-present

029:130	Electricity and Magnetism II (3 sh)	Spring 2001
029:029	Physics III (4 sh)	Fall 2001, Fall 2002
029:192	Nuclear and Particle Physics (3 sh)	Spring 2002, Spring 2003
029:247	Quantum Field Theory (3 sh)	Fall 2003
029:027	Physics I (4 sh)	Fall 2004, Fall 2005, Fall 2006
029:275	Particle Physics (3 sh)	Spring 2007
029:140	Quantum Mechanics I( 3 sh)	Fall 2007
029:141	Quantum Mechanics II (3 sh)	Spring 2008
029:081	Introductory Physics I (4 sh, 2 lecture sections)	Spring 2009
610:030	Explorations in Computing, Math and Science (1 sh)	Fall 2009
029:039	First year seminar: The physics of space and time (1 sh)	Fall 2010
029:225	Scholarly Integrity in Research (1 sh)	Fall 2011
029:269	Ethics in Physics for Graduate Students (1 sh)	Fall 2012
029:299	Ethics in Physics for Post Docs (1 sh)	Fall 2012
029:225	Special Topics in Physics: Particle Dark Matter (1 sh)	Spring 2013
029:269	Ethics in Physics for Graduate Students (1 sh)	Fall 2013

Graduate Students Supervised (Chair)

Minh Vu Luu	PhD	In progress	
Weidong Bai	MS	AY 13-14	
Yu Seon Jeong	PhD	July 2011	Postdoctoral appointment, Yonsei University, Korea
Alexander Bulmahn	PhD	May 2010	Instructor, University of Montana
Yiwen Huang	MS	May 2005	Degree in statistics, employment in industry
Lara Pasquali	PhD	May 1999	Postdoctoral appointment at Dortmund University, Germany; currently employed in financial industry
Dal Soo Oh	PhD	December 1998	Government job, Korea
Kevin R. Barger	MS	May 1992	unknown

Mary Hall Reno, Physics and Astronomy

## 5. Service (Selected)

### 1. Departmental Service

- Chair (Fall 2009-2014)
- Associate Chair and Director of Graduate Studies, (Fall 2006-Spring 2009)
- Executive Committee (Ex-officio Fall 2006-Spring 2009, Fall 2004-Spring 2006, Chair 2005-2006, Fall 1998-Spring 2000)
- Education and Operations Committee (Ex-officio Fall 2006-Spring 2009, Fall 1995-Spring 1997)
- Undergraduate (Co-)Director (Fall 2001-Spring 2006)
- First-year undergraduate student advisor (Fall 2000-Spring 2006)
- Search committee (Astronomy, Fall 2006-present)
- Search committee (Astronomy, academic yr 01-02, 96-97; Laser Science, academic yr 01-02, 94-96; Space Physics, academic yr 91-92)
- Graduate Student Admissions Committee (Fall 1992-Spring 1995)
- Policy, Planning and Budget committee (Fall 1991-Spring 1994)

### 2. College of Liberal Arts and Sciences & University Committees and Service

- Departmental Representative at the Statewide Articulation Conference, February 10, 2012, hosted by the Liaison Advisory Committee on Transfer Students (LACTS), reviewing physics standards.
- College of Liberal Arts and Sciences Executive Committee (Fall 2008-Spring 2011)
- Presidential Scholarship Selection Committee (Spring 2010, Spring 2011, Spring 2012)
- College of Education 5-year review of the Dean (Spring 2009)
- CLAS Scholarship Committee (Fall 2006-Spring 2009)
- NCA Self-Study Subcommittee on Entry and Transition (Spring 2006-Spring 2007)
- Admissions Committee for CLAS (advisory) (Fall 2002-Spring 2005)
- Faculty Senate (Fall 2002-Spring 2005)
- Women in Science and Engineering (WISE) (Program Faculty, Fall 1999-2002; Advisory Board Member, Fall 1998-Spring 1999, Search committee member for WISE director, Spring 1998)

### 3. Referee/Consultant

- Journal referee for Physical Review Letters, Physical Review D, Astroparticle Physics, Journal of Physics G: Nuclear Physics B, Nuclear Physics A, Science
  - National Science Foundation Proposals
  - Department of Energy Proposal
  - National Science Foundation panel, 2005, 2007, 2008, 2011, 2014.
  - Department of Energy panel, 2011
  - Promotion and tenure letters, review letter for other institutions (3 in 2011, 2 in 2012, 1 in 2013)
  - CONICET – Chile proposal review 2010.
  - Oxford University Press (textbooks)
  - Addison Wesley Longman (textbooks)
  - American College Testing
4. Other professional service
- Member, Executive Board of the Iowa Mathematics and Science Education Partnership (IMSEP), July 2009-June 2012.
  - Member, Committee on the Status of Women in Physics, 2007-2009, (vice chair 2008, chair 2009, co-PI of CSWP proposal to Elsevier Foundation to fund childcare grants at APS meetings, funded at \$5000/year for 3 years beginning 2009)
  - Team member, CSWP site visit to physics department, May 2009 (University of Oregon), September 2010 (University of Utah), November 2012 (Yale University, team leader), October 2013 (Ohio State University).
  - Chair, CSWP program organization for the April Meeting of the American Physical Society (May 2-5, 2009)
  - Member, selection committee for the M. Hildred Blewett Awards, American Physical Society, 2009, 2010, 2011.
  - Member, selection committee for the Katherine Weimer Award, American Physical Society, 2008.
  - Member, nominating committee, Division of Particles and Fields, American Physical Society, 2004-2005, 2011.
5. Conferences
- Steering Committee Member, American Physical Society/AAPT Department Chairs Meeting, 2013-2014, Meeting June 2014.
  - Co-organizer (with I. Sarcevic, J. Learned and M. Goodman), Neutrinos with Mass and Oscillations, Present and Future Experiments, Aspen Center for Physics, June 26-July 16, 2000