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Present Position
Professor and Head of Physics
College of Science
Oregon State University

Area of Interest: Experimental High Energy Physics

Education
B. S. Degree, 1977, Stanford University (Mathematics)
M.A. June 1980, University of California. Berkeley (Physics)
Ph.D. Degree, December, 1984, University of California. Berkeley (Physics)
Ph.D. Advisor: George Trilling

Employment

1979 - 1984	Research Assistant, Lawrence Berkeley Laboratory Mark II collaboration
1985 - 1988	Research Associate, EFI, University of Chicago CCFR Collaboration
1988 - 1990	Wilson Fellow, Fermi National Accelerator Laboratory E665 Muon Scattering Collaboration
1990 - 1995	Assistant Professor, Dept. of Physics and Astronomy, Northwestern University E665 and D0 Collaborations
1995 - 2000	Associate Professor, Dept. of Physics and Astronomy, Northwestern University D0 and NuTeV Collaborations
1999-2000	Staff Scientist at Fermilab (leave of absence from Northwestern)
2000-2014	Professor, Dept. of Physics and Astronomy, Northwestern University CTEQ, D0, $g-2$ and MINERvA Collaborations
2004-2007	Associate Dean for Research and Graduate Studies Weinberg College of Arts and Sciences, Northwestern University
2010-2014	Chair, Department of Physics and Astronomy, Northwestern University
2015-present	Head, Department of Physics, Oregon State University MINERvA and DUNE Collaborations

Awards and Honors

1988	Robert Rathbun Wilson Fellowship, Fermi National Accelerator Center
1991	Department of Energy Outstanding Junior Investigator Award
1993	A.P. Sloan Fellowship
1997	Associated Student Government Faculty Honor Roll
2000	Elected Fellow of the American Physical Society
2000	Fermilab Employee Recognition Award
2015	APS Division of Particles and Fields Mentoring Award
2017	Distinguished Referee, European Physical Journal

Professional Service

1991-1997	Spokesperson of Fermilab Experiment E665
1993-1995	Member, Fermilab Users Executive Committee
1996-1998	Member, APS Division of Particles and Fields Executive Committee
1996-1998	D0 Collaboration QCD convener
1996-1999	Member, Dept. of Energy High Energy Physics Advisory Panel
1998-2001	Member, Large Hadron Collider Council, European Center for Nuclear Research (CERN)
2000	Co-leader Fermilab Neutrino Factory Physics Study
2000-2001	Co-leader D0 software and computing project
2001-2005	Member, Fermilab Program Advisory Committee
2005-2007	Member, DOE/NSF Neutrino Scientific Advisory Group (NUSAG)
2005-2012	Member of the Board, Fermilab Research Association
2007-2008	Chair, D0 Collaboration Institutional Board
2007-2009	D0 Collaboration Electroweak Convener
2008-2012	Chair, FRA Visiting Scholars Selection Committee
2008-2014	Computing Infrastructure Coordinator, MINERvA collaboration
2009-	D0 representative, Tevatron Electroweak Working Group (TEVEWWG)
2010-2013	Sanford Underground Research Facility Program Advisory Committee
2010	Co-leader for Strategic Partnerships in development of the NU Strategic Plan
2012-2014	Member and Secretary, C11 Committee (Particle Physics) International Union for Pure and Applied Physics
2014-present	Jefferson Laboratory Program Advisory Committee
2015	Brookhaven Laboratory Nuclear and Particle Physic Program Advisory Committee
2015	Member, NSF/DOE Nuclear Science Long Range Planning Working Group
2015-present	CERN Scientific Policy Committee
2015-present	Member and Vice Chair, C11 Commission(Particle Physics) International Union for Pure and Applied Physics
2018-2020	Chair, C11 Commission International Union for Pure and Applied Physics
2017-2018	Computing Coordinator for the DUNE collaboration

Selected Papers

Co-Author on 657 publications with 47,563 citations (h-index 101 in the INSPIREHEP database). High Energy Physics lists all contributors on all papers. I list the most significant recent papers below. The full list is at the end of this file and available at http://inspirehep.net.

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[1] W. K. Tung, J. G. Morfin, H. Schellman, S. Kunori, A. Caldwell, F. I. Olness, "Structure Functions and Parton Distributions," in 4th DPF Summer Study on High-energy Physics in the 1990s, Snowmass, CO, USA, 27 Jun - 15 Jul 1988, pp.305-330. FERMILAB-CONF-89-026 This study led to the Morfin-Tung and CTEQ PDF sets.

[2] M. R. Adams *et al.*, [E665 Collaboration], "Proton and deuteron structure functions in muon scattering at 470-GeV," Phys. Rev. **D54**, 3006-3056 (1996).

[3] B. Abbott *et al.*, [D0 Collaboration], "The inclusive jet cross section in $\bar{p}p$ collisions at $\sqrt{s} = 1.8$ TeV," Phys. Rev. Lett. **82**, 2451-2456 (1999). [hep-ex/9807018].

[4] C.Albright *et al.*, S. Geer and H. Schellman editors, "Physics at a Neutrino Factory," FERMILAB-FN-0692. Aug 2000. 133 pp. arXiv:hep-ex/0008064

[5] G. P. Zeller *et al.*, [NuTeV Collaboration], "A Precise determination of electroweak parameters in neutrino nucleon scattering," Phys. Rev. Lett. **88**, 091802 (2002). [hep-ex/0110059].

[6] V. M. Abazov *et al.* [D0 Collaboration], "Measurement of the W Boson Mass with the D0 Detector," Phys. Rev. Lett. **108**, 151804 (2012). [arXiv:1203.0293 [hep-ex]]

[7] V. M. Abazov *et al.* [D0 Collaboration], "Measurement of $\sin^2\theta^{\ell}_{\rm eff}$ and Z-light quark couplings using the forward-backward charge asymmetry in $p\bar{p} \to Z/\gamma^* \to e^+e^-$ events with $\mathcal{L} = 5.0$ fb^{-1} at $\sqrt{s} = 1.96$ TeV," Phys. Rev. D **84**, 012007 (2011) [arXiv:1104.4590 [hep-ex]].

[8] L. Fields *et al.* [MINERvA Collaboration], "Measurement of Muon Antineutrino Quasi-Elastic Scattering on a Hydrocarbon Target at $E_\nu \sim 3.5$ GeV," Phys. Rev. Lett. **111**, 022501 (2013) [arXiv:1305.2234 [hep-ex]].

[9] T. A. Aaltonen *et al.* [CDF and D0 Collaborations], "Combination of CDF and D0 W-Boson Mass Measurements," Phys. Rev. D **88**, 052018 (2013) [arXiv:1307.7627 [hep-ex]].

[10] A. V. Kotwal, H. Schellman and J. Sekaric, "Review of Physics Results from the Tevatron: Electroweak Physics," IJMPA, **30**, 06 (2015). arXiv:1409.5163 [hep-ex].

[11] C.E. Patrick, L. Fields, H. Schellman *et al.*, " Double Differential Measurement of Antineutrino Quasi-Elastic Scattering on a Hydrocarbon Target at $E_\nu \sim 3.5$ GeV" In preparation

Undergraduate Advisees

Evan Peters (BS Physics/Nuclear Engineering 2017), Gabriel Nowak (2018), Abraham Teklu (2018), Alex Gonzalez (2019)

Graduate Advisees

Panagiotis Spentzouris (Fermilab, Head, Scientific Computing Division), Tacy Joffe-Minor (Univ. of Arkansas, Visiting Assistant Professor) , Tracy Taylor Thomas (Jive Software, Portland, OR, Director for Professional Services Operations), Robert Snihur (Univ. of Nebraska, CMS Computing), Geralyn "Sam" Zeller (Fermilab, MicroBooNE spokesperson and Neutrino Department Head), Tim Andeen (U.T. Austin, Assistant Professor, ATLAS), Gabriel Juarez (co-advised, UIUC Mechanical Enginerring, Assistant Professor), Sahal Yacoob (Senior Lecturer, Univ. of Cape Town, SA, ATLAS) and Cheryl Patrick (Postdoc, University College London, SuperNEMO), Amit Bashyal (current, DUNE).

Postdoctoral Advisees

Iain Bertram (Lancaster Univ., Professor, ATLAS), Lucyna de Barbaro (Lucent/Alcatel, Technical Specialist), Harald Fox (Lancaster, Senior Lecturer, ATLAS), Jonathan Hays (Queen Mary College, Lecturer, CMS), Gregory Davis (Research Staff, IDA), Michael Kirby (Fermilab, Scientist 1, MicroBoone), Laura Fields (Fermilab, Scientist 1, MINERvA/DUNE), Leah Welty-Rieger (Fermilab, GEANT consultant, $g-2$), Mateus Fernandes Carneiro da Silva (current, MINERvA/DUNE).

Professional Biography

Since receiving her doctorate in 1984, Heidi Schellman's research has focused on measurements of proton structure and electroweak parameters. After three years at the University of Chicago as a member of the CCFR neutrino scattering experiment, she joined the E665 muon scattering experiment as a Wilson Fellow at Fermilab. She led an effort to build a precision vertex drift chamber capable of running in the muon beam which led to a factor of 5 improvement in the angular and momentum resolution of the experiment and precision measurements of the proton and deuteron structure functions at very low scattering angles. She was elected scientific spokesperson for the E665 collaboration in 1991 and served until the collaboration disbanded in the late 1990s.

She joined the faculty at Northwestern University in 1990 and, at the same time, joined the D0 proton-antiproton collider experiment at Fermilab. Her main research interest on D0 has been the measurement of QCD and electroweak parameters at very high momentum transfer and their relation to lower energy measurements. She served as QCD Analysis convener from 1996 to 1998, as the Software and Computing Coordinator in 2000-2001, as D0 luminosity convener from 2002-2004, as Institutional board Chair in 2007-2008 and as Electroweak Physics group convener from 2007-2009. Her recent work is on the production and decay of the W and Z bosons, including the most precise measurement the mass of the W boson and a recent measurement of the Weinberg angle via parity violation in Z boson production and decay.

She also rejoined the NuTeV collaboration in 1995 in order to measure electroweak parameters with neutrino beams. Geralyn Zeller received the Tanaka Dissertation prize in 2003 for her doctoral work under Schellman's supervision. Schellman is now a member of the MINERvA neutrino cross section experiment which recently published new results on quasi-elastic anti-neutrino scattering.

In addition to her experimental work she has been a long-term participant in joint experimental-theoretical work on parton distributions, as a member of the original working group that led to the Morfin-Tung parton distribution sets in the late 1980's and more recently through membership in the CTEQ collaboration. Her main work has been in standardization of the presentation of experimental results to allow precision fits to data from multiple experiments.

In addition to her work on QCD and Electroweak Physics Schellman has served as consultant on technical issues related to high energy physics and computing for the U.S. Department of Energy (High Energy Physics Advisory Panel and Neutrino Scientific Advisory Group) and at CERN in Switzerland.

At Northwestern, she taught both undergraduate and graduate students and has originated four courses. A data analysis and programming course for sophomores intended to prepare students for research in their junior and senior years, Qualifying Boot Camp, a course for graduate students in which provides rigorous preparation for the Departmental Qualifying exam and a new course on Research Conduct. These courses has been highly successful with students from underrepresented groups who have gone on to successful careers in academia. In 2013 she teamed with a professor of German and a professor of Electrical Engineering on a Humanities course 'Einstein in the 20th Century' for non-scientists.

She has served as Associate Dean for Research in the Weinberg College of Arts and Sciences then as Chair of the Department of Physics and Astronomy at Northwestern. As Associate Dean, she was able to reconfigure funding packages to increase guaranteed support for graduate students in the Humanities and Social Sciences from four to five years. One of her major projects as Chair was improvements in support for students in the Introductory Physics courses, through the introduction of smaller course sections and drop-in tutoring.

She moved to Oregon State University in January 2015 as Head of the Department of Physics. As Head she has increased the outreach activities of the Department and encouraged initiatives to recruit and retain students across the Physics curriculum. This includes expansion of peer instruction in introductory courses, experiential astrophysics courses for beginning majors, a redesign of the sophomore major courses and support for the thriving Society for Physics Students. Her main role has been in finding resources and championing the creative initiatives of faculty. Her research efforts are concentrated on quasi-elastic anti-neutrino scattering and on optimization of the DUNE experiment beamline design with graduate student Amit Bashyal and postdoc Mateus Carneiro.

Teaching

Term	Course		Enrolled	Completed	As a whole	Instructor
Fall 2015	PH 314	Modern Physics	28	18	5.7	5.8
Winter 2016	PH 607	Research Seminar	7	–	–	–
Winter 2017	PH 607	Research Seminar	10	8	5.3	5.5
Spring 2017	PH 595	Particle Physics	23	10	5.1	5.1

Talks and Conference Organization

1. Invited Plenary talk at the Annual Meeting of the American Physical Society, April 1995.
2. Invited Plenary talk at the Paris Workshop on Quantum Chromodynamics, April 1995.
3. Invited talk at the Blois Conference on Strong Interaction Physics, June 1996.
4. Lecture on Statistical Analysis of Data at the University of D0, July 1995.
5. Colloquium at Illinois Institute of Technology, October 1995.
6. Invited talk at the Wisconsin Phenomenology Workshop, Madison Wisconsin, April, 1996
7. Colloquium at Harvard University, April 15, 1996.
8. Colloquium at Purdue University, September 26, 1996.
9. Invited talk at the Workshop on Small-x Physics, Argonne National Laboratory, October 1, 1996.
10. Seminar on Diffractive Production on Heavy Nuclei at University of Illinois, November 5, 1996.
11. Organized a 4-day workshop on 'QCD at D0' at Michigan State University, December 1996.
12. Invited talk at the Workshop on Deep Inelastic Scattering, Chicago, IL, April 1997.
13. Summary of the Fermilab Research Program at the Fermilab annual User's meeting, July 1997.
14. Invited Plenary talk *Review of QCD Experiment* at the 28th Lepton Photon Symposium in Hamburg, Germany, July 1997.
15. Invited Plenary talk *Deep Inelastic Scattering at a Muon Collider Complex* Workshop on Physics at the First Muon Collider, Batavia IL, November 1997.
16. Seminar on neutrino measurements of the Weinberg Angle, University of Michigan, November, 1998.
17. Seminar on high energy jet production at the D0 experiment, Argonne National Laboratory, December, 1998.
18. Parallel session talk at International Workshop on Deep Inelastic Scattering and QCD, Berlin, Germany, April 2000.

19. Plenary summary talk at International Workshop on Deep Inelastic Scattering and QCD, Berlin, Germany, April 2000.
20. H. Schellman, "Fermilab Neutrino Factory Physics Study ", Plenary talk at 'MUMU99 Workshop', San Francisco, December 1999.
21. H. Schellman " Status Report on D0 Reconstruction Farms ", Parallel session talk at CHEP2000, Padova Italy, February 2000.
22. H. Schellman *et al.*, " Neutrino beams from muon storage rings ", Neutrino and Nucleon Decay Workshop, Irvine, California, March 2000.
23. "Neutrino Factories" Seminar at University of Maryland, March 2000.
24. "Neutrino Factories" Seminar at University of Illinois, April 2000.
25. "Neutrino Factories" Plenary talk at Phenomenology 2000, Madison Wisconsin, April 2000.
26. "Results of the Neutrino Factory Physics Study", presentation to the Fermilab Physics Advisory Committee, April 2000.
27. "Neutrino Factories" Plenary talk at Neutrino 2000 conference, Subdbury Canada, June 2000.
28. "Neutrino Oscillations" Lecture at the CTEQ summer School, Lake Geneva Wisconsin, WI, June 2000.
29. "Deep Inelastic Scattering at the Tevatron", Plenary talk at the Symposium on the Tevatron, Fermilab June 2000.
30. "Neutrino Factories", colloquium at Stanford Linear Accelerator Center, June 2000.
31. "Neutrino Factories", colloquium at University of Illinois, Chicago, Sept. 2000.
32. "Neutrino Factories", Seminar at Enrico Fermi Institute, Univ. of Chicago, Feb. 2001.
33. "A Computing Facility for Accelerator Development" $\gamma\gamma$ collider workshop, Fermilab, March 2001.
34. "Structure Function Measurements at Neutrino Factories " , presentation at Snowmass 2001 Workshop, Snowmass, Colorado.
35. "Precision Measurements with Incoming and Outgoing Neutrinos", Colloquium, IIT February 2002.
36. "Precision Measurements with Incoming and Outgoing Neutrinos", Colloquium, University of Manitoba, March 2002.
37. "Precision Measurements with Incoming and Outgoing Neutrinos", Seminar, Michigan State University, May 2002.
38. "Precision Measurements with Incoming and Outgoing Neutrinos", Colloquium, Jefferson National Laboratory, September 2002.

39. "Precision Measurements with Incoming and Outgoing Neutrinos", Seminar, Institute for Nuclear Theory, University of Washington, November 2002.
40. "Precision Measurements with Incoming and Outgoing Neutrinos", Seminar, Caltech, April 2003.
41. "Run II - Are we there yet?", Invited Plenary talk at the Phenomenology Symposium, Madison Wisconsin, May 2003.
42. Organized Workshop, "From Zero to Z-Zero", Fermilab, February 2004.
43. Lectures on "Practical Collider Physics", TASI Summer School, Boulder Colorado, June 2004.
44. Invited Conference Summary talk, 40th Rencontres de Moriond, La Thuile, Italy, March 2005.
45. "Practical Collider Physics", four lectures at "Prospects in Theoretical Physics", Institute for Advanced Study, Princeton NJ, July 2005.
46. "Electroweak constraints on QCD from the Tevatron", Joint CTEQ-JLAB meeting, Jefferson National Laboratory, Newport News VA, November 2005.
47. Invited talk, "Electroweak and QCD Physics at the Tevatron" at the 2006 Aspen Winter Conference "Particle Physics at the Verge of Discovery", Aspen CO, February 2006.
48. "Practical Collider Physics", lecture at the CTEQ Summer School, Greece (declined due to conflict).
49. "D0 results on vector boson physics", CTEQ meeting, Dallas, TX, December 2006.
50. Invited Talk at the Symposium Honoring Wu-Ki Tung, Michigan State University, May 2007.
51. High Energy Physics seminar on Luminosity Measurements - University of Chicago, October 2007.
52. Talk at the CTEQ collaboration meeting, Michigan State University, November 2007.
53. Organized Workshop on Databases for MINERνA at the Massachusetts College of Liberal Arts, November 2007.
54. Invited talk to the Particle Physics Prioritization Panel, February 2008.
55. Invited presentation to the Particle Physics Prioritization Panel, February 2008.
56. Invited Plenary Talk on Tevatron Results at the Deep Inelastic Scattering Workshop, London, UK, April 2008.
57. Talk on the MINERνA experiment at the Deep Inelastic Scattering Workshop, London, UK, April 2008.
58. Talk on the Project X proton upgrade at the Deep Inelastic Scattering Workshop, London, UK, April 2008.

59. Seminar on Luminosity Measurements at Colliders at Manchester University, England, April 2008.
60. Member, local organizing committee for the Linear Collider Workshop 2008, held in Chicago in November 2008.
61. Chair, organizing committee for a workshop on computing for neutrino experiments held at Fermilab in March 2009.
62. Talk, "Offline Computing for the MINERVA Neutrino Experiment ", Conference on Computers in High Energy Physics, Prague, March 2009.
63. Talk, " 'No daughter of mine is going to Caltech' : experiences of a second generation woman scientist", ADVANCE Talk at the University of Nebraska, Lincoln, April, 2009.
64. Colloquium, "Squeezing the Higgs", University of Nebraska, Lincoln, April 2009.
65. Seminar, "Squeezing the Higgs", Argonne National Laboratory, May 2009.
66. Invited Plenary talk on "Electroweak Physics" at the American Physical Society Division of Particles and Fields, Detroit, July 2009.
67. Member, local organizing committee for the Neutrino Summer School, held at Fermilab in July 2009.
68. Colloquium, "Squeezing the Higgs", Louisville, September 2009.
69. Organized CTEQ09 workshop at Northwestern, November 2009.
70. Colloquium, "From Zero to Z-Zero, Electroweak Physics on Many Scales", Jefferson National Laboratory, December 2009.
71. Two invited talks at the Deep Inelastic Scattering Workshop in Florence Italy, April 2010.
72. Lectures at the HUGS Summer School, Jefferson National Laboratory, June 2010.
73. Invited talk at the "Precision Tests of the Standard Model: from Atomic Parity Violation to Parity-Violating Lepton Scattering" at the European Center for Theoretical Physics, November 2010.
74. Invited talk at the Rencontres de Moriond, March 2011, declined.
75. Invited talk at the Deep Inelastic Scattering Workshop in Newport News, Virginia, April 2011.
76. Talk on diboson production at the International Conference on High Energy Physics, Melbourne, Australia, July 2012.
77. Colloquium, "Twinkle, Twinkle, Little Loop", Lucent Alcatel, Naperville, IL, September 2013.
78. Colloquium, "Twinkle, Twinkle, Little Loop", Notre Dame, December 2013.
79. Colloquium, "Twinkle, Twinkle, Little Loop", Oregon State University, April 2014.

80. Talk on MINERvA CCQE results at the CTEQ Collaboration meeting, Northwestern University, May 2014.
81. Talk on MINERvA CCQE results at the International Conference on High Energy Physics, Valencia, Spain, July 2014.
82. Talk on LBNE Beam Optimization at the International Conference on High Energy Physics, Valencia, Spain, July 2014.
83. Colloquium, "Neutrino Nus", Oregon State University, May, 2015.
84. Neutrinos: Past, Present, Future, Frank Merritt Festschrift, University of Chicago, May 2015.
85. Colloquium, "Neutrino Nus", University of Oregon, May, 2015.
86. Colloquium, "Neutrino Nus", University of Valencia, Spain, May 2016.
87. Invited Talk " Neutrino Nus", Northwest Section meeting of the American Physical Society, Penticton, BC, Canada, May 2016.
88. Lectures on Neutrino Physics, "TAE Altes Energias", Benasque, Spain, Sept. 2016.
89. Talk "Measurement of the anti-neutrino CCQE cross section with the MINERvA experiment", APS Division of Nuclear Physics Meeting, Vancouver, BC, Oct. 2016.
90. Colloquium, "Particle Physics", Linn-Benton Community College, February 2017.
91. Colloquium, "Neutrino Nus", Colorado State University, April 2017.
92. Invited talk summarizing "Fixed Target Physics" at the Fermilab 50th Anniversary Symposium, June 2017.