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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)
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, MicroBooNE 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

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
- 2008-2012 Chair, FRA Visiting Scholars Selection Committee
- 2008- Computing Infrastructure Coordinator, MINERvA collaboration
- 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
- 2013 Fermilab Deputy Director Search Committee
- 2014- Jefferson Laboratory Program Advisory Committee
- 2015- Brookhaven Laboratory Nuclear and Particle Physics Program Advisory Committee
- 2015- CERN Scientific Policy Committee
- 2015- Member and Vice Chair, C11 Commission(Particle Physics)
International Union for Pure and Applied Physics

Selected Papers

Co-Author on 609 publications with 39,042 citations. High Energy Physics lists all contributors on all papers. I list the most significant recent papers below. The full list is 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] [arXiv:0908.0766 [hep-ex]]. 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 $\sin^2 \theta_{\text{eff}}^{\ell}$ and Z-light quark couplings using the forward-backward charge asymmetry in $p\bar{p} \rightarrow Z/\gamma^* \rightarrow e^+e^-$ events with $\mathcal{L} = 5.0 \text{ fb}^{-1}$ 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].

Graduate Advisees

Panagiotis Spentzouris (Fermilab, Head, Scientific Computing Division), Tacy Joffe-Minor (Arkansas, Visiting Assistant Professor), Tracy Taylor Thomas (Jive Software, Portland, OR), Robert Snihur (Nebraska, CMS Computing), GERALYN “Sam” Zeller (Fermilab, MicroBooNE spokesperson), Tim Andeen (Columbia, ATLAS), Gabriel Juarez (co-advisor)(MIT Biophysics), Sahal Yacoob (Lecturer, KwaZulu-Natal, SA, ATLAS) and Cheryl Patrick (present MINERvA)

Postdoctoral Advisees

Iain Bertram (Lancaster, ATLAS), Lucyna de Barbaro (Lucent/Alcatel), Harald Fox (Lancaster, ATLAS), Jonathan Hays (Queen Mary College, London, CMS), Gregory Davis (IDA), Michael Kirby (Fermilab, MicroBoone), Laura Fields (present, Minerva/DUNE), Leah Welty-Rieger ($g - 2$)

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.

She has also joined the $g - 2$ muon magnetic moment experiment under construction at Fermilab where she is working on optimization of electron trackers intended to provide better knowledge of the beam dynamics.

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

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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.