

Curriculum Vitae

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University education

- 2000 PhD - Physics, University of Minnesota, Minneapolis, Minnesota
Thesis Title: A New Upper Limit for the Tau-Neutrino Magnetic Moment
Thesis Advisor: Professor Roger Rusack
- 1995 Physik Diplom, Westfälische Wilhelms Universität Münster, Germany
Diplom Title: Elektron-Photon Korrelationen in der Elektronenstossionisation
Diplom Advisor: Professor Karl Blum

Positions held

- Professor, Michigan State University, since 2017.
- Associate Professor, Michigan State University, 2012 to 2017.
- Visiting Professor at LPSC Grenoble, France, 2014 to 2015.
- Assistant Professor, Michigan State University, 2006 to 2012.
- Visiting Lecturer, Université de Provence, Aix-Marseille, France, June 2008.
- Research Associate, Michigan State University, 2000 to 2005.
- Research Associate, Research and Teaching Assistant, University of Minnesota, 1995-2000.

Awards/Fellowships

- CERN Scientific Associate, 2017 to 2018.
- US ATLAS Scholar, visiting Argonne National Laboratory, 2015 to 2016.
- College of Natural Sciences Teacher-Scholar award at MSU, 2012.
- NSF CAREER award in 2010.
- Thomas H. Osgood Memorial Faculty Teaching Award at MSU, 2008.
- Tollestrup award for a postdoctoral research project, Fermilab, 2005.
- Graduate School Fellowship and TA award, University of Minnesota, 1996, 1998.

Teaching

I strive to improve student learning and to enhance the student experience in every course that I teach. I have introduced quantitative assessments of learning gains and other tools in every class I teach. I focus mostly on large introductory lecture courses for scientists and engineers, plus electronics, particle physics, and lab courses.

Students

- Thesis adviser to Sarah Heim and Weigang Geng (both graduated in 2012); Brad Schoenrock (graduated 2016); Kuan-Yu Lin (graduated 2021). Heim won a MSU Tracy Hammer award and a CNS dissertation completion fellowship and NSF student at CERN support. Geng won a French Eiffel fellowship to spend 1 year at CPPM in France. Lin won a US-ATLAS fellowship at Argonne National Lab. Heim and Lin have gone on to careers in particle physics.
- Thesis committee member and co-supervisor for several other students, at MSU and other institutions, including visiting PhD students Peng Ge (graduated 2014) and Rui Yuan (graduated 2022).
- Supervisor of many undergraduate students, several of whom have won awards or have moved on to grad school.

Research

I am exploring the energy frontier, studying the laws of nature at the highest energies. My interest is the top quark, which is a key to the fundamental understanding of our universe, at the Tevatron, the LHC, and future colliders.

- ATLAS experiment at the LHC at CERN, 2006 – present.
 - Measurement of four-top-quark production and searches for new physics in the four-top final state (since 2022). Searches for a new heavy boson W' in the third-generation final state (tb) (since 2016).
 - LHC top working group co-convener (2018-2020)
 - Top group co-convener (2016-2018)
 - Single top quark physics, SM measurements and new physics searches in single top final states. Single top convener 2011 to 2012.
 - Editor for many internal notes, conference notes and ATLAS publications.
 - Editorial board chair and editorial board member for top and Higgs analyses.
 - Member of US ATLAS analysis support panel (2014-2016), organizing and reviewing presentations, and chair of the 2014 search committee to find the next US ATLAS deputy physics support manager.
 - Risk Manager for the US-ATLAS Phase-II upgrade project (since 2024) and L3 manager for phase 2 muon sMDT upgrade project (since 2016) and L3 manager for fiber plant phase 1 upgrade project, funded by DOE (2014-2020).
 - L1Calo on-call expert in summer 2010, many shift leader and trigger shifts.
 - Team leader for MSU since 2012.
- Phenomenological top quark studies (2004 – present).
 - Co-convener of the top quark working groups for the Snowmass 2021 and 2013 efforts to plan the future of US HEP.
 - Member of the CTEQ group since 2019. Organizer of the 2023 fall CTEQ meeting.
 - Phenomenological studies of top quark and BSM production for Tevatron and LHC.

Culture contributions and Outreach

- Under my guidance, the colloquium committee in Physics&Astronomy at MSU has added more emphasis on recruiting an inclusive group of speakers and leaders that represent the diversity of people and interests in the department.
- ATLAS upgrade construction for HL-LHC was being done by undergrads from physics, engineering, and other majors at MSU. I emphasized diversity in hiring.
- Planetarium show development of “Phantom of the Universe”, a full-dome planetarium show, in collaboration with LBNL and UTA and others (2016). I am one of three executive producers. Prior to that, developed “Relics of the Big Bang”, a traditional planetarium show at MSU with undergrads in physics and Comartsci.
- Many other outreach projects, public talks, etc.

Service at MSU and in HEP

- 2024: Member of the International Organizing Committee for the Top Quark workshop Top2024 in France.
- 2023: Co-chair of the local organizing committee for the Top Quark workshop Top2023 in Traverse City, Michigan.
- 2023: Co-organizer of the DIS conference in East Lansing, Michigan and the top quark session at LHCP.
- 2022: Chair of the International Advisory Committee for the Top Quark workshop Top2022.
- 2021: Chair of the local organizing committee for the Top Quark workshop Top2021 (zoom).
- Organizer or co-organizer of many other workshops or workshop sessions.
- Many conference, colloquium and seminar talks, mainly on top quark physics.
- APS member and reviewer, also reviewer for European journals.