

Lauren Tompkins

Assistant Professor of Physics, Stanford University

Employment

- 2014–Present **Assistant Professor**, *Department of Physics*, Stanford University.
2011–2014 **Postdoctoral Scholar**, *Enrico Fermi Institute*, University of Chicago.

Education

- 2005–2011 **University of California at Berkeley**, *Ph.D. Physics - May 2011; M.A. Physics - May 2008*.
Thesis - A measurement the inelastic cross section in pp collisions at $\sqrt{s} = 7$ TeV with the ATLAS detector
- 2004–2005 **Fulbright**, *Laboratoire de l'Accélérateur Linéaire, Orsay, France*.
- 2000–2004 **University of California at Berkeley**, *B.A. in Physics with High Honors; B.A. in Mathematics*.
Distinction in General Scholarship

Selected Awards and Honors

- 2017–2022 NSF CAREER Award
2014–2017 Stanford Terman Fellow
2013 Enrico Fermi Institute Compton Lecturer
2005–2008 National Science Foundation Graduate Research Fellowship
2004–2005 Fulbright Scholar - France

Grants

- 2017–2022 **U.S. ATLAS Operations: Discovery and Measurement at the Energy Frontier**, *Subcontract PI: Lauren Tompkins*, NSF Award Number: 1509795, Subaward Number:76749/1136652.
- 2017–2019 **Towards Inclusive Physics at Stanford**, *PIs: Risa Wechsler and Lauren Tompkins*, Stanford Diversity and Inclusion Innovation Grant.
- 2016–2021 **CAREER:Two Higgs are Better than One: Investigating Electroweak Symmetry Breaking at the LHC and Beyond with Real-Time Charged Particle Reconstruction**, *PI: Lauren Tompkins*, NSF Award Number: 1553564.
- 2016 **The 22nd International Conference on Computing in High Energy and Nuclear Physics, CHEP 2016; October 10-14, 2016 in Marriott Marquis, San Francisco**, *PI: Lauren Tompkins*, NSF Award Number: 1643098.
- 2015–2016 **Exploring Electroweak Symmetry Breaking at the LHC with ATLAS's Fast Tracker**, *PI: Lauren Tompkins*, NSF Award Number: 1509795.

Teaching at Stanford

- 2014–2017 **PHYSICS 83N**, *Physics of the 21st Century*, Freshman Seminar.
Fall 2014, Spr. 2016, Spr. 2017
- 2017 **PHYSICS 152/252**, *Introduction to Particle Physics*.
Spr. 2017

Student and Postdoctoral Scholar Mentorship

Postdoctoral Scholars

- 2015–Present Nikolina Ilic, *Joining faculty at the Nikhef Nijmegen April 2018*
- 2016–2017 Aaron Armbruster, *Currently research staff at CERN*

Graduate Students

- 2014–Present Zihao Jiang, *PhD advisor*
- 2017–Present Robert Mina, *PhD advisor*
 - 2017 Nicole Hartman, *Rotation, Summer research*
 - 2017 Jannicke Pearkes, *Summer*

Undergraduate Students

- 2017–Present Jessica Fry, *On campus and summer research at CERN*
 - 2017 Nicel Mohamed-Hinds, *Summer research at CERN*
 - 2016 Renee Cai, *Summer research at CERN*
 - 2015 Mingyu Kang, *Summer research*
 - 2015 Grace Busse, *Summer research*

Visiting Students

- 2016 Steffie Anne Thayil, *Master's Thesis Advisor, BITS Pilani*
- 2014–2016 Victor Ruelas, *Master's Thesis Advisor, CSU Fresno*
 - 2017 Valentina Lee, *Undergraduate, CSU Fresno*
 - 2017 Alexander Collins, *Undergraduate, CSU Channel Islands*
 - 2016 Olivia Krohn, *Undergraduate, CSU Fresno*
 - 2016 Michael Dobbs, *Undergraduate, CSU Sonoma*

Appointments and Elected Positions

- 2017–Present **FTK System Coordinator**, *Project leader for ATLAS FastTracker trigger upgrade.*
- 2016–2017 **FTK Technical Coordinator**, *Technical lead for ATLAS FastTracker trigger upgrade.*
- 2016–Present **US Atlas Management Advisory Committee Member**, *Elected by US institutions in ATLAS to advise US Atlas Operations program managers.*
- 2014–Present **Data Formatter Lead**, *Responsible for production, installation and commissioning of FTK Data Formatter system—a 32-board multi-gigabit, FPGA-based data processing electronics system.*

Professional Service

General

- 2017–2018 Elected member of the US LHC User's Association Executive Committee
- 2015–2016 Member of SLAC KA-25 detector R&D advisory panel
- 2016–Present Reviewer for NSF proposals

Atlas Collaboration

- 2016–Present Institute lead for Phase-II hardware track trigger. Responsible for motherboard firmware design.
- 2013–Present Editorial Board member or chair of 5 ATLAS papers and 3 conference notes.

Stanford University

- 2017–Present Physics Undergraduate Women and Gender Minorities at Stanford (PUWMAS) Faculty advisor. Supported founding of group.
- 2016–Present Society of Physics Students Faculty advisor.
- 2016–Present Equity and Inclusion Committee Member.
- 2016–Present Spring Colloquium Committee Member (Currently Chair).
- 2015–2017 Undergraduate Studies Committee Member.
- 2014–2015 Graduate Admissions Committee Member.
- 2015–2017 Graduate Orientation and Recruitment Committee Member

Conference Organization

- 2017 Founder of NorCal HEP-EXchange, A forum for northern californian high energy physics students and postdocs to share work in progress. Stanford, CA USA.
- 2016 Local Organizing Committee for 22nd International Conference on Computing in High Energy and Nuclear Physics, CHEP 2016, San Francisco, CA, USA.
- 2015 Local Organizing Committee for Connecting the Dots, Workshop on pattern recognition in sparsely sampled data. Berkeley, CA, USA.
- 2014 Co-chair of the Data-processing: Embedded Software session of the 2014 Technology and Instrumentation in Particle Physics international conference. Amsterdam, NL.
- 2013 Convener of the Accelerators, Detectors and Computing Track of American Physical Society's Division of Particles and Fields Annual Meeting. UC Santa Cruz, CA, USA.

Equity and Inclusion

- 2017–Present Chair of US ATLAS Ad hoc Committee on Diversity and Inclusion. Responsible for developing a strategic plan for Diversity and Inclusion for US ATLAS program.
- 2017–Present ATLAS Experiment Diversity and Inclusion Contact. One of four collaboration contact points on matters of Diversity and Inclusion.
- 2016–Present Coordinate CERN side of CSU NUPAC CERN summer student program. Provide mentors and be point of contact for 10 students from CSU system.
- 2015–Present Stanford Physics Department Summer Research Programming Advising. Initiated effort to include professional development and equity and inclusion related material into summer research program.
- 2006–2008 Co-chair of UC Berkeley Society for Women in the Physical Sciences.

Selected Outreach Activities

- 2015 Marin Science Seminar on the Large Hadron Collider.
- 2014 Teen Tech SF panel on Large Hadron Collider.
- 2014 Panelist for APS West Section Conference for Undergraduate Women in Physics.
- 2013 Compton Lectureship. A nine seminar series for the general public on the discovery of the Higgs Boson.
- 2013 Member of the organizing committee for the APS Midwest section Conference for Undergraduate Women in Science.
- 2012–2014 Initiated Chicago's first Expanding Your Horizons conference. Exposed 140 low income middle school girls to STEM careers. Chaired an organizing committee of 10 scientists and educators.
- 2012 Lecturer for Enrico Fermi Institute's Fermi Summer Interns program.
- 2011 Lecturer on LHC physics at the Berkeley Center for Cosmological Physics's Global Teacher's Academy.

Seminars, Colloquia and Conference Talks

Seminars and Colloquia

- 2017 Reed College Physics Department Seminar. Portland OR, USA.
- 2017 Rutherford Appleton Research Laboratory Physics Seminar. Oxford, UK.
- 2016 UC Berkeley Physics Department Colloquium. Berkeley CA, USA.
- 2016 San Francisco State University Physics Department Colloquium. San Francisco CA, USA.
- 2016 Lawrence Berkeley National Laboratory Brown Bag Instrumentation Seminar. Berkeley CA, USA.
- 2016 Imperial College High Energy Physics Seminar. London, UK.
- 2016 Fermi National Accelerator Laboratory LHC Physics Seminar. Batavia IL, USA.
- 2015 California State University at Fresno Physics Department Colloquium. Fresno, CA, USA.
- 2015 Matthew Spitzer Memorial Lecture. California State University East Bay, CA, USA.
- 2014 Lawrence Berkeley National Laboratory Research Progress Meeting Seminar. Berkeley CA, USA.
- 2014 Massachusetts Institute of Technology Nuclear and Particle Physics Seminar. Cambridge MA, USA.
- 2013 University of Zurich Particle and Astrophysics Seminar Series. Zurich, Switzerland.
- 2013 University College of London High Energy Physics Seminar Series. London, UK.
- 2012 Lawrence Berkeley National Laboratory Research Progress Meeting Seminar. Berkeley CA, USA.
- 2012 Lawrence Berkeley National Laboratory Brown Bag Instrumentation Seminar. Berkeley CA, USA.
- 2011 University of Chicago High Energy Physics Seminar. Chicago IL, USA.

Conference and Workshop Talks

Within the ATLAS Collaboration, conference and workshop talks for international events are allocated by the collaboration's speakers committee based on the speaker's expertise in the subject and service to the collaboration on a fair allocation basis. Talks of this sort are indicated with a * in front of the title below.

- 2017 **ATLAS Electroweak and QCD Results*. Aspen 2017 Winter Conference "From the LHC to Dark Matter and Beyond" Aspen, CO, USA.
- 2015 **QCD in Higgs & BSM: Results from ATLAS and CMS*. Plenary Talk at QCD@LHC 2015. London, England.
- 2014 **The Design, Performance and Preliminary Commissioning of the ATLAS Fast Tracker*. IEEE Nuclear Science Symposium 2014. Seattle, WA USA.
- 2013 **Searches for Single Object and Missing Energy with the ATLAS Detector at the LHC* European Physical Society Meeting High Energy Physics Section. Stockholm, Sweden.
- 2013 *ATLAS Physics in Run II and Beyond* Invited talk at 2013 US ATLAS Annual Meeting - Argonne National Laboratory, Darien, IL USA.
- 2011 **Total inelastic cross section, and prospects for elastic and central-exclusive measurements in ATLAS*- XIX International Workshop on Deep Inelastic Scattering and Related Subjects - Newport News, VA USA
- 2011 *Measurement of the inelastic cross-section in p-p collisions at $\sqrt{s} = 7$ TeV with the ATLAS Detector*- Underlying Event and Minimum Bias at the LHC Working Group Meeting - CERN, Switzerland
- 2010 *New Minimum Bias and Diffraction-Enhanced Minimum Bias Results from ATLAS*- Underlying Event and Minimum Bias at the LHC Working Group Meeting - CERN, Switzerland
- 2010 *Underlying Event and Diffraction with Charged Particles in ATLAS* - Berkeley-MIT workshop on Hadron Collider Physics - Boston, MA
- 2009 *Commissioning ATLAS with Cosmics* - SLUO LHC Workshop - Palo Alto, CA
- 2008 *ATLAS Tracking Performance with Cosmic Rays* - APS April Meeting - Denver, CO

Selected Publications, Technical Reports, Public and Conference Notes

Peer-Reviewed Publications

As a member of the ATLAS experiment, I am the author of 689 peer-reviewed papers as of October 1, 2017. Papers are published with the entire collaboration author list in alphabetical order. Below are listed only papers that myself or members of my group (N. Ilic or Z. Jiang) have played a significant role in the analysis. In prep indicates that the internal collaboration review process has begun.

- The ATLAS Collaboration. *Search for Higgs Bosons Produced via Weak Boson Fusion and Decaying to Bottom Quark Pairs*. In prep.
- The ATLAS Collaboration. *Search for pair-produced leptoquarks in the $b\tau b\tau$ decay channel with 36.1 fb^{-1} of pp collision data at $\sqrt{s} = 13$ TeV with the ATLAS detector*. In prep.
- The ATLAS Collaboration. *Searches for resonant and non-resonant di-Higgs production in the $bb\text{-}\tau\tau$ decay channel in pp collisions at $\sqrt{s} = 13$ TeV with the ATLAS detector*. In prep.
- The ATLAS Collaboration. *Measurement of the Inelastic Proton-Proton Cross-Section at $\sqrt{s} = 13$ TeV with the ATLAS Detector*. Phys. Rev. Lett. 117 (2016) 182002.
- The ATLAS Collaboration. *Measurement of the Inelastic Proton-Proton Cross-Section at $\sqrt{s} = 7$ TeV with the ATLAS Detector*. Nature Comm. vol 2, arXiv:1104.0326.
- The ATLAS Collaboration. *Luminosity Determination in pp Collisions at $\sqrt{s} = 7$ TeV Using the ATLAS Detector at the LHC*. Eur.Phys.J. C71 (2011) 1630. arXiv:1101.2185.
- The ATLAS Collaboration. *Charged-particle multiplicities in pp interactions measured with the ATLAS detector at the LHC* New J. Phys. 13 (2011) 053033. arXiv:1012.5104.

- The ATLAS Collaboration. *Charged-particle multiplicities in pp interactions at $\sqrt{s} = 900$ GeV measured with the ATLAS detector at the LHC*. The ATLAS Collaboration. Phys. Lett. B 688, 21 (2010) arXiv:1003.3124.

Technical Reports

- The ATLAS Collaboration. *Fast Tracker Technical Design Report*. Tech. Rep. CERN-LHCC-2013-007. ATLAS-TDR-021, CERN, Geneva, Jun, 2013. <https://cds.cern.ch/record/1552953>.
- The ATLAS Collaboration. *Technical Design Report for the Phase-I Upgrade of the ATLAS TDAQ System* Tech. Rep. CERN-LHCC-2013-018 ATLAS-TDR-023. <https://cds.cern.ch/record/1602235>.

Recent Collaboration-Reviewed Preliminary Results

- The ATLAS Collaboration. *Optimisation of the ATLAS b-tagging performance for Release 21*. ATL-PHYS-PUB-2017-013, July 2017. <http://cdsweb.cern.ch/record/2273281>
- The ATLAS Collaboration. *Quark versus Gluon Jet Tagging Using Jet Images with the ATLAS Detector*. ATL-PHYS-PUB-2017-017. July 2017. <http://cdsweb.cern.ch/record/2275641>
- The ATLAS Collaboration. *Identification of Jets Containing b-Hadrons with Recurrent Neural Networks at the ATLAS Experiment*. ATL-PHYS-PUB-2017-003. March 2017. <http://cdsweb.cern.ch/record/2255226>
- The ATLAS Collaboration. *Discrimination of Light Quark and Gluon Jets in pp collisions at $\sqrt{s} = 8$ TeV with the ATLAS Detector*. ATLAS-CONF-2016-034, CERN, Geneva, July, 2016. <https://cds.cern.ch/record/2131621>.
- The ATLAS Collaboration. *Studies of b-tagging performance and jet substructure with the ATLAS detector in a high p_T $g \rightarrow b\bar{b}$ rich sample from pp collisions at $\sqrt{s} = 8$ TeV*. ATLAS-CONF-2016-002, CERN, Geneva, July, 2016. <https://cds.cern.ch/record/2131598/>.
- The ATLAS Collaboration. *Tagging boosted Higgs ($\rightarrow b\bar{b}$) bosons in ATLAS in early Run-II*. July 2015. ATL-PHYS-PUB-2015-035 <http://cdsweb.cern.ch/record/2042155>

Conference Proceedings

- Annovi, A ; Castegnaro, A ; Giannetti, P ; Jiang, Z ; Luongo, C ; Pandini, C ; Roda, C ; Shochet, M ; **Tompkins, L** ; Volpi, G *Variable resolution Associative Memory optimization and simulation for the ATLAS FastTracker project* 11th International Conference on Large Scale Applications and Radiation Hardness of Semiconductor Detectors July 2013, Florence, Italy.
- Bogdan, M (The University of Chicago) ; Magalotti, D (University of Modena and Reggio Emilia) ; Piendibene, M (University of Pisa) ; Shochet, M (The University of Chicago) ; **Tompkins, L** (The University of Chicago) *Method for Backplane Data Communication with the VME Rear Transition Modules Developed for the ATLAS FTK Project* 2013 IEEE Nuclear Science Symposium and Medical Imaging Conference, Seoul, Korea, Kor, 26 Oct - 2 Nov 2013.
- A Andreani, A Annovi, M Beretta, M Bogdan, M Citterio, F Alberti, P Giannetti, A Lanza, D Magalotti, M Piendibene, M Shochet, A Stabile, J Tang, **L Tompkins** and G Volpi *The AMchip04 and the processing unit prototype for the FastTracker*. 2012 JINST 7 C08007.

- J Anderson, A Andreani, A Andreatza, A Annovi, M Atkinson, B Auerbach, M Beretta, V Bevacqua, R Blair, G Blazey, M Bogdan, A Boveia, F Canelli, A Castegnaro, V Cavaliere, F Cervigni, P Chang, Y Cheng, M Citterio, F Crescioli, M Dell'Orso, G Drake, M Dunford, L Fabbri, A Favareto, M Franchini, S Geer, P Giannetti, F Giannuzzi, F Giorgi, S Gruenendahl, H -L Li, J Hoff, T Iizawa, O Jamieson, A Kapliy, M Kasten, Y K Kim, N Kimura, A Lanza, F Lasagni, V Liberali, T Liu, D Magalotti, A McCarn, C Melachrinou, C Meroni, T Mitani, P Murat, A Negri, M Neubauer, Y Okumura, B Penning, M Piendibene, J Proudfoot, C Roda, I Sacco, Y Sakurai, C Sbarra, M Shochet, A Stabile, J Tang, F Tang, **L Tompkins**, R Tripiccion, J Tuggle, S Valentinetti, V Vercesi, M Verzocchi, M Villa, G Volpi, J Webster, K Yorita, J Zhang and A Zoccoli *FTK: a Fast Track Trigger for ATLAS* 2012 JINST 7 C10002.
- **L. Tompkins** (UC, Berkeley & LBL, Berkeley) for the ATLAS Collaboration. *Total inelastic cross section, and prospects for elastic and central-exclusive measurements in ATLAS*. Proceedings for XIX International Workshop of Deep Inelastic Scattering and Related Subjects. Newport News, VA USA. April 11-15th, 2011. arXiv:1110.1642
- **L. Tompkins** (UC, Berkeley & LBL, Berkeley) for the ATLAS Collaboration. *Performance of the ATLAS Minimum Bias Triggers in pp collisions at the LHC*. arXiv:1009.6133. To appear in the proceedings for the Hadron Collider Physics Symposium (HCP2010), Toronto, Canada, 22-28 August 2010. arXiv:1009.6133
- M. Battaglia, B. Hooberman, **Lauren Tompkins** (UC, Berkeley & LBL, Berkeley) , J.M. Bussat, D. Contarato, P. Denes, T.S. Kim, T. Stezelberger (LBL, Berkeley) . *Development of Monolithic CMOS Pixel Sensors for the ILC at LBNL*. SNIC-2006-0108, Apr 2006. In the Proceedings of 9th International Symposium on the Detector Development for Particle, Astroparticle and Synchrotron Radiations Experiments (SNIC 2006), Menlo Park, California, 3-6 Apr 2006.
- Ph. Gris, R. Lafaye, T. Plehn, L. Serin, **L. Tompkins** and D. Zerwas. *The trilepton signal in the focus point region*. Appearing in B.C. Allanach et al. *Les Houches physics at TeV colliders 2005 beyond the standard model working group: Summary report*. FERMILAB-CONF-06-338-T, SLAC-PUB-11770, Feb 2006. 269pp. Contributed to Les Houches Workshop on Physics at TeV Colliders, Les Houches, France, 2-20 May 2005. hep-ph/0602198
- M. Battaglia (UC, Berkeley & LBL, Berkeley) , G. Abrams, P. Denes, L.C. Greiner, B. Hooberman, **Lauren A. Tompkins**, H.H. Wieman (LBL, Berkeley). *Monolithic CMOS pixel R&D for the ILC at LBNL*. In the proceedings of 2005 International Linear Collider Workshop (LCWS 2005), Stanford, California, 18-22 Mar 2005. hep-ph/0508138