

CURRICULUM VITAE
JACOB SEARCY

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Date of Birth: February 8, 1985
Nationality: USA

Education

Ph.D. Experimental Particle Physics, 2012 (Expected - August)

University of Oregon joint with Brookhaven National Laboratory

Thesis: Measurement of the top quark pair production cross section in pp collisions at $\sqrt{s}=7$ TeV in the $\ell + \tau$ channel with ATLAS

GPA: 4.04/4.00

Advisers: Prof. James Brau, Dr. Srinivasan Rajagopalan

B.Sc. Physics, 2007

New Mexico Institute of Mining and Technology

GPA: 3.7/4.0

Employment

University of Oregon and Brookhaven National Laboratory

Graduate Research Assistant: ATLAS Collaboration

2008-present

University of Oregon

Teaching Assistant: Department of Physics and Astronomy

2007-2008

National Radio Astronomy Observatory, Socorro

Electrical Engineer: Back End Electronics Division

2006-2007

California Institute of Technology and NASA Jet Propulsion Laboratory

Undergraduate Research Fellow: Earth and Planetary Atmospheres Division

2006

New Mexico Institute of Technology

Undergraduate Researcher: Department of Atmospheric Physics

2004-2006

Sandia National Laboratory, Albuquerque

Summer Intern: Department of Manufacturing Science and Technology

2004,2005

Summer Intern: Department of Manufacturing Simulation and Visualization

2003

Research Experience

ATLAS EXPERIMENT (2008 – PRESENT)

- $t\bar{t} \rightarrow l + \tau + b + X$ observation and cross section

- Lead analyzer on a small team that developed and implemented a new OS-SS analysis technique that allowed for the most precise measurement of the top cross section in a final state with a hadronically decaying tau lepton. Preliminary results were published as ATLAS-CONF-2011-119, and updated results have been submitted to PLB. The total error of 13% is a significant improvement over the best TeVatron measurement with a total error of 25% and the best CMS measurement with a total error of 18%.
- Wrote and maintained software for creating derived physics data-sets (DPDs) utilized by ATLAS's top physics group
- Physics analysis tools liaison for ATLAS's top physics group
- Distributed analysis support team (DAST) member
- ATLAS Shift Leader
- Studied the efficiency of multivariate tau lepton identification
- Studied effects of pile-up for top quark rediscovery

ATACAMA LARGE MILLIMETER ARRAY - ALMA (2006 - 2007)

- Electrical Engineer for the back end electronics system used for the ALMA telescope array
 - Telescopes in the ALMA array must send 120 Gbit/s over a single fiber optic cable to a central signal processing facility pushing the limits of technology
 - Commissioned and developed diagnostic systems for ALMA data transmission

NASA JET PROPULSION LABORATORY-JPL (2006 SUMMER)

- Wrote and developed computationally efficient radiative transfer models for simulations of planetary atmospheres.
 - Approximation techniques for time efficient algorithms
 - Code optimization

NEW MEXICO TECH ATMOSPHERIC PHYSICS GROUP

- Investigated the Madden-Julian oscillation, an important tropical weather pattern.
 - Large data-set analysis and manipulation
 - Time series analysis
- Participant in NASA's tropical cloud systems and processes mission in Costa Rica.
 - Data collection in one-chance only conditions

SANDIA NATIONAL LABORATORY-SNL (2003-2005 SUMMERS)

- Invented and built a gas assisted induction-brazing system used for rapid brazing of ceramic to metal parts.
 - Extensive experience building and maintaining large vacuum systems
 - Developed software for critical braze furnace temperature controllers
 - Production of hermetic equipment for other SNL departments
- Programing support for SNL manufacturing visualization department.
 - Wrote graphical user interfaces to proprietary algorithms for public distribution

Computing Experience

Platforms and Applications

UNIX/LINUX, ROOT, PYTHIA, familiar with large code frameworks

Languages

C, C++, Python, Java, UNIX shell scripting, FORTRAN, Matlab, IDL, XML, HTML, PHP, Labview, \LaTeX

Publications

About 100 scientific publications in refereed journals as a member of the ATLAS Collaboration (Full list available from the Spire database).

Selected Publications

- ATLAS Collaboration, “Measurement of the top quark pair production cross section with ATLAS in pp collisions at $\sqrt{s} = 7$ TeV using final states with an electron or a muon and a hadronically decaying tau lepton”, Submitted to PLB, ePrint:arxiv.org/abs/1205.2067.
- Searcy, J., “Standard Model and Heavy Ion Results from ATLAS”, Proceeding of the ECTP-2011 annual meeting (2011), e-Print: cdsweb.cern.ch/record/1437008.
- Searcy, J., “Measurement of the top quark pair production cross section in pp collisions at $\sqrt{s}=7$ TeV in $\mu + \tau$ final states with ATLAS”, Proceeding of the Top-2011 workshop (2011), e-Print: cdsweb.cern.ch/record/1416350.
- ATLAS Collaboration, “Measurement of the top quark pair production cross section in pp collisions at $\sqrt{s} = 7$ TeV in $\mu + \tau$ final states with ATLAS”, ATLAS-CONF-2011-119 (2011), e-Print: cdsweb.cern.ch/record/1376411.
- ATLAS Collaboration, “Measurement of the top quark-pair production cross-section”, EPJC 71 (2011) 1577.
- ATLAS Collaboration, “Prospects for measuring top pair production in the dilepton channel with early ATLAS data at $\sqrt{s} = 10$ TeV”, ATL-PHYS-PUB-2009-086 (2009) e-Print: cdsweb.cern.ch/record/1200287.

Presentations

- “Standard Model and Heavy Ion Results from ATLAS”, Egyptian Center of Theoretical Physics, Cairo, Egypt, December 2011
- “Measurement of the top quark pair production cross section in pp collisions at $s= 7$ TeV in the $\mu + \tau$ Channel with ATLAS”, Top 2011 4th International Workshop on Top Quark Physics, Sant Feliu de Guixols, Spain, September 2011
- “Top pair production in the channel $t\bar{t} \rightarrow W(e/\mu + \nu_{e,\mu})W(\tau_{\text{had}} + \nu_{\tau_{\text{had}}})bb$ ”, American Physical Society March Meeting 2011, Anaheim, USA, March 2011
- “The Madden Julian Oscillation in East Pacific QuikSCAT Winds” (A51A-0019), American Geophysical Union Fall Meeting, December 2005

Honors, Memberships, Miscellaneous

- New Mexico Tech Scholar Award
- Mary S. Mann Scholarship Recipient
- Caltech Summer Undergraduate Research Fellowship 2006
- Selected for first DEISA-TeraGrid Summer School in high performance computing

References

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