

Jamie Tolan

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Education

Stanford University

Ph.D, Physics, September 2007 - September 2014

Degree conferral: September 25th, 2014

Disseration title: Testing Inflationary Cosmology with BICEP2 and The Keck Array

GPA: 3.78/4.0(Overall)

University of California, Berkeley

Double Major: Bachelor of Arts in Physics and Astrophysics, August 2002 - May 2006

Distinction in General Scholarship

GPA: 3.79/4.0(Overall), 3.896 (Physics only), 4.0 (Astrophysics), 3.5 (Math)

Research

-Postdoctoral Scholar, Stanford University 10/14 - Present

Observational Cosmology: Deployment of BICEP3

-Research Assistant, Stanford University 6/08 - 9/14

Observational Cosmology: CMB polarimetry with BICEP, BICEP2 and the Keck Array. Experience with instrument design and fabrication, deployment to the South Pole (2010, 2011 & 2012), calibration and data analysis.

-Research Experience for Undergraduates, Montana State University 6/05 - 8/05

Solar Physics: Created first automated software to locate and track Supra-Arcade Downflows in Solar flare arcades in YOHKOH and TRACE X-ray data.

Publications

Refereed Publications

"BICEP2 I: Detection of *B*-Mode Polarization at Degree Angular Scales by BICEP2". 2014. BICEP2 Collaboration. Physic Review Letters. 112, 241101.

"BICEP2 II: Experiment and Three-Year Data Set". 2014. BICEP2 Collaboration.

"Degree-scale CMB Polarization Measurements from three years of BICEP1 Data" 2013. Barkats et al. The Astrophysical Journal.783, 3, 67.

"Measurement of CMB Polarization Power Spectra from Two Years of BICEP Data" 2010. Chiang et al. The Astrophysical Journal. 711, 2, 1123.

Conference Proceedings

"BICEP2 and Keck Array operational overview and status of observations" 2012. R. W. Ogburn IV et al. arXiv:1208.0638

"Optical Characterization of the Keck Array Polarimeter at the South Pole" 2012. A. G. Vieregg et al. arXiv:1208.0844

"Optimization and sensitivity of the Keck Array" 2012. S. Kernasovskiy et al. arXiv:1208.0857

"Antenna-coupled TES bolometers for the Keck Array, Spider, and Polar-1" 2012. R. O'Brient et al. arXiv:1208.1247

"Noise Performance of the BICEP2 antenna-coupled TES bolometers at the South Pole" 2011. J. Brevik et al.

"The Keck Array: a pulse tube cooled CMB polarimeter" 2010. C. Sheehy et al. arXiv:1104.5516v1

"Optical Performance of the BICEP2 Telescope at the South Pole" 2010. R. Akin et al.

"Initial performance of the BICEP2 antenna-coupled superconducting bolometers at the South Pole" 2010. J. Brevik et al. Proc. of SPIE Vol. 7741 7741H-1

"The BICEP2 CMB polarization experiment" 2010. R. W. Ogburn IV et al. Proc. of SPIE Vol. 7741 7741G-1

"Supra-Arcade Downflows: Results from Observational Analysis", by McKenzie, D.E., Savage, S.L., and Tolan, J.E. 2007, New Solar Physics with Solar-B Mission: The 6th Solar-B Science Meeting, ASP Conference Series, 369, 489

Popular Press

"Detection of Waves in Space Buttresses Landmark Theory of Big Bang" New York Times. Dennis Overby. March 17, 2014.

"Ripples in Space Are Evidence of Universes Early Growth Spurt" Discover. Bill Andrews. March 17, 2014.

"How Big Bang Gravitational Waves Could Revolutionize Physics" Scientific American. Lawrence M. Krauss. September 2014.

"From Discovery to Dust" PBS. Amanda Geffer. October 29, 2014.

Talks

"Cosmology with the Keck Array" SCAR (Scientific Committee on Antarctic Research): Open Science Conference. July 18, 2012.

"BICEP2 Data Analysis Techniques" KIPAC Friday Afternoon Computing. April 17, 2014

"Detection of B-mode Polarization at Degree Scales using BICEP2" Counter Culture Labs, Public Lecture. April 27, 2014.

"Cosmology with BICEP2 and the Keck Array" *Invited Talk*, 'The Dark Universe' TR33 Conference, Heidelberg University. October 14, 2014.

Conferences attended

CMBPOL, Chicago. June 2009
 LTD 13, SLAC. July 2009
 SPIE, San Diego. June 2010
 Berkeley CMB Lensing Workshop. April 2011
 SLAC Summer School. Aug 2011
 SGSI, Energy at Stanford. Sept 2011
 SCAR: Open Science Conference. July 2012

Teaching

Teaching Assistant, Stanford University:
 Physics 108: Low Temperature Lab. Spring 2011 & Winter 2013
 Physics 23: Electricity and Optics: Discussion Section. Winter 2008
 Physics 22: Mechanics and Heat: Lab Section. Fall 2007

Relevant Coursework

Stanford University

Back of the Envelope Physics (216), Quantum Mechanic(230,231), Continuum Mechanics (211), Statistical Mechanics (211), Extragalactic Astrophysics and Cosmology (362), Quantum Field Theory (331), Physics of Astrophysics (360), Advanced Gravitation(364), Classical Electrodynamics (220, 221)

University of California, Berkeley

Calculus 1B, Multivariable Calculus(53), Linear Algebra and Differential Equations(54), Introduction to Astrophysics(7A,7B), Introduction to Physics for Scientists and Engineers(7A,7B,7C), Quantum Mechanics (137A,B), Electromagnetism and Optics(110A), Planetary Astrophysics(162), Stellar Physics(160), Analytic Mechanics(105), Mathematics Tools for the Physical Sciences(121A)

Laboratory: Infrared Astronomy(122), Basic Semiconductor Circuits(111BSC), Advanced Physics(111ADV)

Computer Skills

Programming: MATLAB, IDL, Python, LabVIEW, C/C++, HTML/CSS, Javascript, \LaTeX , Perl, Bash
 Systems: Mac OS X, UNIX, Linux, Windows
 Design: Solidworks, Altium