

Jamie Tolan

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Education

Stanford University

Ph.D: Physics, September 2014.

GPA 3.78/4.00

Dissertation Title: "Testing Inflationary Cosmology with BICEP2 and The Keck Array."

Dissertation Advisor: Chao-Lin Kuo

University of California, Berkeley

B.A.: Physics and Astrophysics, May 2006.

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

Distinction in General Scholarship

Research Positions

Postdoctoral Scholar Stanford University 10/14 - 5/15

Observational Cosmology: BICEP2/Keck Analysis and Deployment of BICEP3.

Graduate 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 / Keck Array VII: Matrix based E/B Separation applied to BICEP2 and the Keck Array" 2016. BICEP2/Keck Collaboration. *The Astrophysical Journal*. 825, 1, 66.

"BICEP2 / Keck Array V: Measurements of B-mode Polarization at Degree Angular Scales and 150 GHz by the Keck Array" 2015. The Keck Array and BICEP2 Collaborations. *The Astrophysical Journal*. 811, 126.

"A Joint Analysis of BICEP2/Keck Array and Planck Data" 2015. BICEP2/Keck and Planck Collaborations. *Physical Review Letters* 114, 101301.

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

"BICEP2 II: Experiment and Three-Year Data Set" 2014. BICEP2 Collaboration. *The Astrophysical Journal*. 792, 1, 62.

"Self-Calibration of BICEP1 Three-Year Data and Constraints on Astrophysical Polarization Rotation" 2014. Kaufman et al. *Phys. Rev. D*. 89, 6, 062006.

"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 77411H-1

"The BICEP2 CMB polarization experiment" 2010. R. W. Ogburn IV et al. *Proc. of SPIE* Vol. 7741 77411G-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 Gefter. 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 Experience

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

References

Professor Chao-Lin Kuo. Stanford University, SLAC National Accelerator Laboratory. clk@stanford.edu. 650-736-7880

Professor John Kovac. Harvard University. jmkovac@cfa.harvard.edu. 617-496-0611

Professor Jamie Bock. California Institute of Technology, Jet Propulsion Laboratory. jjb@astro.caltech.edu. 626-395-2017