Aaron Meisner
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Education

- **Harvard University** 2010–present
  Ph.D., Physics (expected 5/2015)
  - Thesis advisor: Douglas Finkbeiner
  - Thesis title: Full-sky, high-resolution maps of interstellar dust with *WISE* and *Planck*
- **Stanford University** 2006–2010
  B.S. Physics with Distinction, Departmental Honors, Concentration in Astrophysics

Research Interests

- Interstellar dust: infrared emission, optical extinction & physical properties
- Survey science and statistical inference with large data sets
- Data-intensive and/or computationally challenging problems in astronomy

Physics/Astronomy Research Experiences

- **Harvard-Smithsonian Center for Astrophysics**
  Advisor: Douglas Finkbeiner *Jan. 2012 – present*
  - ***Project***: *A Full-sky, High-resolution Atlas of Galactic 12μm Dust Emission*
  - Performed a custom reprocessing of the entire ∼10TB, ∼1.5 million exposure *WISE* 12μm imaging dataset to isolate Galactic dust emission.
  - ***Project***: *Two-component Dust Emission Model: Application to the Planck HFI Maps*
  - Created the first ever full-sky *Planck*-based thermal dust model valid from 100-3000 GHz.
- **Harvard-Smithsonian Center for Astrophysics**
  Advisors: Mario Jurić, Anna Frebel *May 2011 – Dec. 2011*
  - ***Project***: *The Metallicity of the Monoceros Stream*
  - Analyzed ∼600 stellar spectra to provide the first ever spectroscopically measured metallicity distribution function for the Monoceros stream.
- **University of Washington Astronomy Department**
  Advisor: Željko Ivezić *Jun. 2010 – Aug. 2010*
  - ***Project***: *Quasar Classification Based On Photometric Variability*
  - Analyzed multiwavelength data to select SDSS quasar candidates for spectroscopic follow-up.
- **Stanford Department of Physics**
  Advisor: Roger Romani *Jun. 2008 – Jun. 2010*
  - ***Project***: *Imaging Redshift Estimates for Gamma-ray BL Lacertae Objects*
  - Modeled high-resolution optical images of a large sample of Fermi-detected active galaxies.

Teaching Experiences

- **Harvard Computer Science 109: Data Science**
  Grader *Sep. 2013 – Dec. 2013*
  - Graded Python coding assignments during Harvard's first ever data science course.
  - Supervised dozens of students' final projects focused on web scraping, machine learning, and Bayesian inference.

- **Digital Scholarship @ Harvard: Data Scientist Training for Librarians**
  Course Assistant *Oct. 2013 – Jan. 2014*
  – Mentored students learning Python while completing projects in topic modeling and natural language processing.
- **Harvard Physics 11b: Electricity, Magnetism & Waves**
  Teaching Fellow *Jan. 2013 – May 2013*
  – Responsibilities included designing and grading MATLAB programming assignments/exams.
- **Stanford Physics 17 "Black Holes"**
  Teaching Assistant *March 2010 – June 2010*
- **Stanford Physics 16 "Cosmic Horizons"**
  Teaching Assistant *Jan. 2010 – March 2010*

Selected Awards

- National Science Foundation Graduate Research Fellowship (2013-present)
- National Defense Science and Engineering Graduate Fellowship (2010-2013)
- Harvard Physics Purcell Fellowship (2010)
- Stanford Jeffrey Willick Memorial Award, "outstandings scholarship in astrophysics" (2010)
- American Astronomical Society Chambliss Astronomy Achievement Award (2010)
- Stanford University President's Award for Academic Excellence in the Freshman Year (2007)
- Robert C. Byrd Honors Scholarship (2006–2010)

Public Data Releases Supervised

- wise.skymaps.info
  – Released half a terabyte of high-resolution 12 micron interstellar dust map images, as well as associated software utilities implemented in both Python and IDL.
- planck.skymaps.info
  – Released *Planck*-based two-component dust model summary files, as well as software utilities necessary to predict dust emission and reddening, with implementations in Python and IDL.

Programming Languages

Python (matplotlib, NumPy, SciPy, scikit-learn, ...), IDL, bash, MATLAB, C++, Java, LaTeX
– Extensive object-oriented programming experience (C++, Java, Python).
– Extensive experience automating and parallelizing computationally intensive tasks in cluster environments with distributed cores and file systems.

Professional Astronomical Observing Experience

- WIYN 3.5m Telescope, Kitt Peak National Observatory 3/23/2009–3/25/2009
  – In person, three full nights, i' band imaging (Mini-Mosaic Camera).

Refereed Journal Publications

First Author:

- "Modeling Thermal Dust Emission with Two Components: Application to the *Planck* HFI Maps," **Aaron Meisner** & D. Finkbeiner. *ApJ*, 798, 88 (2015) [http://arxiv.org/abs/1410.7523]
- "A Full-sky, High-resolution Atlas of Galactic 12 micron Dust Emission with *WISE*," **Aaron Meisner** & D. Finkbeiner. *ApJ*, 781, 5 (2014) [http://arxiv.org/abs/1312.0947]
- "The Metallicity of the Monoceros Stream," **Aaron Meisner**, A. Frebel, M. Jurić, & D. Finkbeiner. *ApJ*, 753, 116 (2012) [http://arxiv.org/abs/1205.0807]
- "Imaging Redshift Estimates for BL Lacertae Objects," **Aaron Meisner** & R. Romani. *ApJ*, 712, 14 (2010) [http://arxiv.org/abs/1002.1343]

Other:

- "Quasar Selection Based on Photometric Variability," C. MacLeod, K. Brooks, Ž. Ivezić, C. Kochanek, R. Gibson, **Aaron Meisner**, S. Kozlowski, B. Sesar, A. Becker, W. deVries. *ApJ*, 728, 26 (2011) [http://arxiv.org/abs/1009.2081]

Public Software Releases

- "`util_2comp`: *Planck*-based two-component dust model utilities", **Aaron Meisner**. *The Astrophysics Source Code Library (2014).* [http://ascl.net/1411.012]
- "`wssa_utils`: WSSA 12 micron dust map utilities", **Aaron Meisner** & D. Finkbeiner. *The Astrophysics Source Code Library (2014).* [http://ascl.net/1402.029]

Conference Proceedings

- "A 100-3000 GHz model of thermal dust emission observed by *Planck*, DIRBE and *IRAS*," **Aaron Meisner** & D. Finkbeiner. American Astronomical Society Meeting 225, #256.14 (2015)
- "A Generalized Method for Measuring R_V in the Milky Way, " A. Lee, G. Green, E. Schlafly, **Aaron Meisner** & D. Finkbeiner. American Astronomical Society 225, #256.16 (2015)
- "Two-component Thermal Dust Emission Model: Application to the *Planck* HFI Maps," **Aaron Meisner** & D. Finkbeiner. American Astronomical Society Meeting 224, #220.14 (2014)
- "Towards a Full-sky, High-resolution Dust Extinction Map with *WISE* and *Planck*," **Aaron Meisner** & D. Finkbeiner. American Astronomical Society Meeting 223, #138.04 (2014)
- "Towards a Full-sky Map of Galactic 12 Micron Dust Emission with *WISE*," **Aaron Meisner** & D. Finkbeiner. American Astronomical Society Meeting 221, #223.06 (2013)
- "Quasar Selection Based on Photometric Variability," C. MacLeod, K. Brooks, Ž. Ivezić, C. Kochanek, R. Gibson, **Aaron Meisner**, S. Kozlowski, B. Sesar, A. Becker & W. deVries. American Astronomical Society Meeting 217, #430.16 (2011)
- "Optical Monitoring of Gamma-ray BL Lacertae Objects with KAIT,"**Aaron Meisner**, R. Romani, A. Filippenko, W. Li & B. Lott. American Astronomical Society Meeting 216, #420.10 (2010)