

# Mason L. Keck

## *Curriculum Vitae*

- CONTACT INFORMATION** Department of Astronomy (541) 999-4728  
Boston University keckm@bu.edu  
725 Commonwealth Avenue people.bu.edu/keckm  
Boston, MA 02215
- EDUCATION** **Boston University**, Boston, MA USA **2012 - present**  
**Ph.D., Astronomy**
  - Advisor: Prof. Alan Marscher  
**Oregon State University**, Corvallis, OR USA **2008 - 2012**  
**Honors B.S., Physics (Graduation date: June 2012)**  
Honors Thesis: X-ray Emissions in Measurements of the Neutron Capture Cross Sections for the Production of  $^{197}\text{Hg}$  and  $^{197}\text{Pt}$  and Scoping the Science Parameter Space of Future X-ray Astrophysics Calorimeter Missions
  - Advisor: Prof. Ken Krane
- RESEARCH INTERESTS** High-Energy Astrophysics, Multi-Wavelength Analysis of Active Galactic Nuclei, Satellite Missions, Gravitational Physics, Astrostatistics
- RESEARCH POSITIONS** **Boston University**, Boston, MA USA  
*Graduate Researcher* **2013 - present**
  - Analyzed very long baseline interferometry VLBA observations of blazars to probe parsec scale regions in blazar jets.
  - Advisor: Prof. Alan Marscher  
**Harvard-Smithsonian Center for Astrophysics**, Cambridge, MA USA  
*Student Intern, Visiting Student, Predoctoral Fellow* **2013 - 2015**
  - Analyzing *NuSTAR* and *Suzaku* X-ray observations of Seyfert 1.5 AGN NGC 4151 to determine the supermassive black hole spin, the temperature of the coronal electrons, and the variability of the coronal emission and intrinsic absorption.  
Advisors: Dr. Laura Brenneman, Dr. Jonathan McDowell, Dr. Martin Elvis  
**NASA Jet Propulsion Laboratory**, Pasadena, CA USA  
*Student Intern* **Summer 2012**
  - Analyzed *GRAIL* satellite maneuver execution errors using JPL navigation software, MONTE, to help improve the *GRAIL* spacecraft dynamic models.

- Advisors: Tung-Han You, Pete Antreasian

**NASA Goddard Space Flight Center, Greenbelt, MD USA**

*Student Intern*

**Summer 2011**

- Wrote a computational routine to automate Monte Carlo simulations using X-ray spectral fitting package Xspec to help with the development of future X-ray astrophysics calorimeter missions.
- Advisor: Dr. Andy Ptak

**Oregon State University, Corvallis, OR USA**

*Undergraduate Researcher*

**2010 – 2012**

- Developed a computational routine to model X-ray background in neutron capture cross-section experiments (2011-2012).
- Calibrated gamma ray spectral data to help determine nuclear energy levels and the half-life of Chlorine-38 using gamma ray spectral analysis program SAMPO (Summer 2010).
- Advisor: Prof. Ken Krane

*Undergraduate Researcher*

**2010 – 2011**

- Developed a Python routine, using SPI master/slave protocol, to adjust the frequency output from a frequency synthesizer for an amateur radio telescope
- Advisor: Prof. William Hetherington

**HONORS AND AWARDS**

Oregon State Physics Department Scholarship Award

**2010**

**TEACHING EXPERIENCE**

**Boston University, Boston, MA USA**

*Teaching Fellow*

- Cosmology, Prof. Alan Marscher
- Alien Worlds, Prof. Andrew West

**Spring 2013**

**Fall 2012**

**Oregon State University, Corvallis, OR USA**

*Laboratory Teaching Assistant, Tutor*

- Intro. General Physics, Instructor Chris Coffin

**Fall 2010**

**LEADERSHIP EXPERIENCE**

BU Astronomy Department

**2016-2017**

*Grad Student Representative*

- Organized graduate student meetings and discussions with faculty

OSU Society of Physics Students Chapter

**2011 - 2012**

*President*

- Organized outreach events at OSU and local elementary schools, and represented

undergraduate majors for faculty search.

**COMPUTING SKILLS**

Languages: Python, c, IDL  
Astronomy Software Packages: Xspec, Diffmap, AIPS, ds9, IRAF  
Operating Systems: Linux, Mac OS X, Windows

**SEMINARS & INVITED TALKS**

- Talk: *Improved Maneuver Reconstructions for the GRAIL Orbiters*. In Proceedings of the 2013 Oregon NASA Space Grant Consortium Student Symposium (Corvallis OR, Feb. 2013)

**CONFERENCE PROCEEDINGS & CONTRIBUTED TALKS**

- Poster: *Improved Maneuver Reconstructions for the GRAIL Orbiters*, In Proceedings of the National Council of NASA Space Grant Directors' Spring Meeting (Washington D.C., Mar. 2013)
- Paper: *Gravity Recovery and Interior Laboratory Mission (GRAIL) Orbit Determination*, You, T., Antreasian, P., Broschart, S., **et al.**, in Proceedings of the 23rd International Symposium on Space Flight Dynamics (Pasadena CA, Oct. 2012)
- Talk: *Scoping the Science Parameter Space of Future X-Ray Calorimeter Missions*, In Proceedings of the 2011 Oregon NASA Space Grant Consortium Student Symposium (Corvallis OR, Nov. 2011)

**PUBLICATIONS**

H-index of 3  
First Author of 1 refereed publications  
Co-author on 2 refereed publication

*NuSTAR and Suzaku X-ray Spectroscopy of NGC 4151: Evidence for Reflection from the Inner Accretion Disk*, **M.L. Keck**, L.W. Brenneman, et al., 2015, The Astrophysical Journal 806 (2), 149

*On Estimating the High-energy Cutoff in the X-Ray Spectra of Black Holes via Reflection Spectroscopy*, J.A. García, T. Dauser, J.F. Steiner, J.E. McClintock, **M.L. Keck**, and J. Wilms, 2015, The Astrophysical Journal Letters 808 (2), L37

*Gamma-Ray Energies in the Decay of <sup>38</sup>Cl*, K.S. Krane, **M.L. Keck**, E.B. Norman, and A.P. Shivprasad, 2012, Applied Radiation and Isotopes, 70, 740

**OUTREACH**

BU Astronomy outreach events  
*Graduate Volunteer*

**2012 - present**

- Presented lectures and led labs for local high school students for two daylong events, including the Upward Bound program

OSU Physics outreach events  
*Undergrad Coordinator*

**2011 – 2012**

- Organized undergraduate volunteers and set up and ran physics department science displays for elementary school students for several events, including the OSU Discovery Days program.

OSU SMILE program  
*Student Mentor*

**March 3, 2011**

- Led middle school students with a daylong engineering project.

**REFERENCES**

**Prof. Alan P. Marscher**

Professor  
 Department of Astronomy  
 Boston University  
 725 Commonwealth Avenue  
 Boston, MA 02215  
 Office: 617-353-5029; Fax: 617-353-5704  
<http://www.bu.edu/blazars>

**Dr. Laura W. Brenneman**

Postdoctoral Fellow  
 Harvard-Smithsonian Center for Astrophysics  
 60 Garden St  
 Cambridge, MA 02138  
 Office: (617) 496-9327

**Prof. Kenneth S. Krane**

Professor Emeritus  
 Physics Department  
 Oregon State University  
 301 Weniger Hall  
 Corvallis, OR 97331-6507  
 Office: (541) 737-1692  
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<http://www.physics.oregonstate.edu/~kranek/>

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