

Breann N. Sitarski

CONTACT INFORMATION

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RESEARCH INTERESTS

Adaptive optics; Galactic Center science; formation and evolution of protostars, young stars, and planets; non-redundant aperture masking; infrared instrumentation.

EDUCATION

University of California, Los Angeles, Los Angeles, CA

- Ph.D., Astronomy/Astrophysics Expected: Summer 2016
– Advisors: Professors Andrea M. Ghez and Mark R. Morris
– Title: *Unveiling Infrared Excess Sources in the Galactic Center with Adaptive Optics*
- M. S., Astronomy/Astrophysics April 2012
– Advisor: Professor Mark R. Morris
– Title: *Keck AO Observations of the Protostellar Disk around Radio Source I in the Orion Kleinmann-Low Nebula*
- B. S., Astrophysics June 2010
Magna Cum Laude; highest departmental honors
– Advisor: Dr. Marshall D. Perrin
– Title: *Integral Field Spectroscopy of the Bipolar Jet from the Herbig Ae Star LkH α 233*

RESEARCH EXPERIENCE

University of California, Los Angeles

Graduate Student Researcher

January 2011 – present

Characterizing red, cold point sources with both gas and dust components in the Galactic Center with infrared imaging. Used to put observational constraints on proposed physical models. Characterizing and modeling point-spread function variation arising from our IR detector, Adaptive Optics system, and telescope. First infrared imaging and physical modeling of a protostellar disk around a young, massive source in Orion.

University of California, Los Angeles

Undergraduate Researcher

June 2008 – August 2010

Used integral field spectroscopy to look at the evolution of a bipolar outflow from an Herbig Ae star over a two-year time baseline to get the velocity of the source and measure the electron density, ionization fraction, and dust content.

Cornell University

Undergraduate Researcher, NSF REU Program

June 2009 – August 2009

Used non-redundant aperture masking interferometry coupled with iterative Lucy-Richardson deconvolutions on different apertures to demonstrate the resolution advantages of the *James Webb Space Telescope* non-redundant mask.

HONORS AND AWARDS

Preston Family Graduate Fellowship

March 2015 - Present

Janet Marott Student Travel Fund Award

January 2011 - Present

NSF Graduate Research Fellowship Program Honorable Mention

April 2012

Physics Excellence Award, UCSD

October 2010

Charles Geoffrey Hilton Award, UCLA, excellence in Astronomy

June 2010

Phi Beta Kappa, UCLA

June 2010

Chambliss Astronomy Student Achievement Award, 215th AAS Meeting

January 2010

Rudnick-Abelmann Scholarship, UCLA, excellence in Astronomy

June 2009

TECHNICAL SKILLS UNIX, IDL, Python, bash, IRAF, c shell, HTML

TELESCOPE
EXPERIENCE

- W. M. Keck Observatory: NIRC2, OSIRIS, NIRSPEC, NIRSPA0, LGS AO, NGS AO.
- Gemini Observatory: GMOS
- Lick Observatory: Shane 3-m (IRCAL, KAST), Nickel 1-m (Primary Camera)
- Palomar Hale Telescope: TripleSpec
- UCLA 24" Cassegrain Telescope

PUBLICATIONS

B.N. Sitarski, G. Witzel, A. M. Ghez, M. R. Morris et al. "G1: An Intriguing Infrared Excess Source in the Galactic Center." (estimated date of publication: Winter 2015).

B. N. Sitarski, M. D. Perrin. "Integral Field Spectroscopy of the Bipolar Jet from the Herbig Ae Star LkH α 233." (estimated date of publication: Late 2014)

G. Witzel, A. M. Ghez, M. R. Morris, **B. N. Sitarski**, A. Boehle, R. D. Campbell, E. E. Becklin, S. N. Chappell, T. Do, J. R. Lu, K. Matthews, L. Meyer, P. Wizinowich, S. Yelda. "Detection of Galactic Center Source G2 at 3.8 microns during Periapse Passage." Submitted.

B. N. Sitarski, M. R. Morris, J. R. Lu, G. Duchêne, A. Stolte, E. E. Becklin, A. M. Ghez, H. Zinnecker. "Keck Adaptive Optics Observations of the Protostellar Disk around Radio Source I in the Orion Kleinmann-Low Nebula." 2013, ApJ, 770, 134.

A. J. Burgasser, **B. N. Sitarski**, C. R. Gelino, S. E. Logsdon, M. D. Perrin. "The Hyperactive L-Dwarf 2MASS J13153094-2649513: Continued Emission and a Brown Dwarf Companion." 2011, ApJ, 739, 49.

CONFERENCE
PROCEEDINGS &
POSTERS

B. N. Sitarski, M. P. Fitzgerald, G. Witzel, L. Meyer, A. M. Ghez, R. D. Campbell, J. R. Lu, K. Matthews. "Modeling instrumental field-dependent aberrations in the NIRC2 instrument on the Keck II telescope." 2014 Proceedings SPIE.

B. N. Sitarski, T. Do, G. Witzel, A. M. Ghez, L. Meyer, A. Boehle, J. R. Lu, S. Yelda, M. R. Morris, E. E. Becklin. "Is G2 Alone? Other Infrared Excess Sources in the Central 0.04 Parsecs of the Galactic Center." 223 AAS Meeting, 238.05

B. N. Sitarski, G. Duchêne, J. R. Lu, M. R. Morris. "Modeling the Near-Infrared Disk around Radio Source I in the Orion Kleinmann-Low Nebula." 221 AAS Meeting, 144.27

B. N. Sitarski, M. D. Perrin. "Integral Field Spectroscopy of the Bipolar Jet from the Herbig Ae Star LkH α 233." 213 AAS Conference, 413.08.

B. N. Sitarski, J. P. Lloyd. "Resolution of Conventional and Masked Apertures with Lucy-Richardson Deconvolution." 215 AAS Conference, 439.10. *Winner of the Chambliss Award*

B. N. Sitarski, C. R. Gelino, A. J. Burgasser, M. D. Perrin. "Discovery of a T Dwarf Companion to the 'Hyperactive' L Dwarf 2MASS J1315094-2649513." Cool Stars 16 Proceedings.

B. N. Sitarski, C. Melis, A. J. Burgasser. "Probing the Massive Primordial Disks around Two Low Mass Stars." 217 AAS Conference, 339.17.

S. Logsdon, A. J. Burgasser, J. J. Bochanski, **B. N. Sitarski**, S. Schmidt, J. Faherty, K. Cruz, A. A. West. "The Brown Dwarf Kinematics Project: Radial Velocities of M and L Dwarfs with MagE." 217 AAS Conference, 434.11.

H. G. Khandrika, A. J. Burgasser, B. Swift, C. Melis, E. Bowsher, **B. N. Sitarski**. “A Search for Photometric Variability in L and T-type Brown Dwarf Atmospheres.” 217 AAS Conference, 434.15.

B. N. Sitarski, M. R. Morris, E. E. Becklin, A. M. Ghez, J. R. Lu, A. Stolte, H. Zinnecker. “Keck AO Observations of the Orion Kleinmann-Low Nebula: Detection of Infrared Spatial Structure Associated with the Protostellar Disk around Radio Source I.” 2011 Keck Science Meeting.

B. N. Sitarski, M. R. Morris, E. E. Becklin, A. M. Ghez, J. R. Lu, A. Stolte, H. Zinnecker. “Keck AO Observations of the Protostellar Disk around Radio Source I in the Orion Kleinmann-Low Nebula.” 219 AAS Meeting, 404.01

M. P. Fitzgerald, G. Witzel, M. C. Britton, A. M. Ghez, L. Meyer, **B. N. Sitarski**, C. Cheng, E. Becklin, R. D. Campbell, T. Do, J. R. Lu, K. Y. Matthews, M. R. Morris, C. R. Neyman, G. A. Tyler, P. L. Wizinowich, S. Yelda. “Modeling Anisoplanatism in the Keck II Laser Guide Star AO System.” 2012 Proceedings SPIE.

K. Phifer, T. Do, A. M. Ghez, L. Meyer, M. Morris, J. R. Lu, **B. N. Sitarski**, G. Witzel, A. Boehle, S. Yelda. “Keck Observations of a Proposed Gas Cloud in the Galactic Center.” 221 AAS Meeting, 254.04

C. Cheng, G. Witzel, **B. N. Sitarski**, L. Meyer, A. M. Ghez. “Measuring the Effect of Limited Point Spread Function Halo Knowledge on Astrometry Measurements.” 221 AAS Meeting, 345.20

B. N. Sitarski, G. Duchêne, J. R. Lu, M. R. Morris. “Modeling the Near-Infrared Disk around Radio Source I in the Orion Kleinmann-Low Nebula.” 221 AAS Meeting, 144.27

L. Meyer, A. M. Ghez, G. Witzel, T. Do, K. Phifer, **B. N. Sitarski**, M. R. Morris, A. Boehle, S. Yelda, J. R. Lu, E. E. Becklin. “The Keplerian Orbit of G2.” IAU Symposium 303, “The Galactic Center: Feeding and Feedback in a Normal Galactic Nucleus.”

B. N. Sitarski, T. Do, G. Witzel, A. M. Ghez, L. Meyer, A. Boehle, J. R. Lu, S. Yelda, M. R. Morris, E. E. Becklin. “Is G2 Alone? Other Infrared Excess Sources in the Central 0.04 Parsecs of the Galactic Center.” 223 AAS Meeting, 238.05

L. Meyer, A. M. Ghez, T. Do, A. Boehle, G. Witzel, **B. N. Sitarski**, S. Yelda, J. R. Lu, M. Morris, E. E. Becklin. “Keck Observations of G2 and Sgr A*.” 223 AAS Meeting, 108.07

B. N. Sitarski, M. P. Fitzgerald, G. Witzel, L. Meyer, A. M. Ghez, R. D. Campbell, J. R. Lu, K. Matthews. “Modeling instrumental field-dependent aberrations in the NIRC2 instrument on the Keck II telescope.” 2014 Proceedings SPIE.

TALKS

Integral Field Spectroscopy of the Bipolar Jet from the Herbig Ae Star LkH α 233
UCLA Journal Club, April 2009

Wavefront Sensing for Sparse Aperture Telescopes
Cornell University REU Presentations, July 2009

Wavefront Sensing for Sparse Aperture Telescopes and Resolution of Conventional and Masked Apertures with Lucy-Richardson Deconvolution
UCLA Journal Club, January 2010

Keck AO Observations of the Protostellar Disk around Radio Source I in the Orion Kleinmann-Low Nebula
American Astronomical Society Meeting, Austin, TX, January 2012

Modeling Anisoplanatism in the Keck II Laser Guide Star AO System
SPIE Astronomical Telescopes + Instrumentation, Amsterdam, the Netherlands, July 2012

(Invited talk) *How do stars and planets form?*
Women in Science, Technology, Engineering, Arts, and Math (STEAM) Conference, Mirman School,
March 2013

The Misaligned Orbit and Circumbinary Disk of GG Tau A
6th Annual LA Basin Earth and Planetary Science Student Symposium, UCLA, April 2013

Star and Planet Formation
STAR Prep Academy Astronomy Lecture Series, STAR EcoStation, November 2013

Is G2 Alone?
American Astronomical Society Meeting, National Harbor, MD, January 2014

(Invited talk) *Planets: Near and Far*
Journey Through the Universe, Hilo, Hawaii, March 2014

Unveiling Infrared Excess Sources in the Galactic Center with Adaptive Optics
Texas A&M University Astronomy Seminar, College Station, TX, September 2014

Galactic Center Source G1 and other G2-like Sources
Keck Science Meeting 2014, Caltech, Pasadena, CA, October 2014

Galactic Center Source G1 and other G2-like Sources
Center for Adaptive Optics Fall Retreat, Lake Arrowhead, CA, November 2014

Galactic Center Source G1 and other G2-like Sources
American Astronomical Society Meeting, Seattle, WA, January 2015

Galactic Center Source G1 and other G2-like Sources
Black Holes in Dense Star Clusters, Aspen Physics Conference Series, Aspen, CO, January 2015

TEACHING
EXPERIENCE

University of California, Los Angeles

Teaching Assistant

- Astronomy 3: “The Nature of the Universe” Winter 2011
- Astronomy 180: “Undergraduate Astrophysics Laboratory” Fall 2012
- Astronomy 180: “Undergraduate Astrophysics Laboratory” Fall 2013

ORGANIZATIONS

American Astronomical Society

- Member of the Division of Planetary Science, 09/2010 - Present
- Member of the Astrostatistics and Astroinformatics Working Group (AASAWG), 04/2013 - Present

Society of Photographic Instrumentation Engineers (SPIE)

International Astrostatistics Association (IAA)

Institute for Planets and Exoplanets, UCLA (iPLEX)

OUTREACH AND
LEADERSHIP

Astronomy Live!

June 2011 – December 2014

Lead Outreach Coordinator

I spent three years as the lead coordinator of UCLA’s graduate student based outreach group.

I was in charge of coordinating astronomy outreach activities with schools around the LA area, including bringing the students on campus and organizing groups of volunteers to go to schools. I also organized the “Exploring Your Universe” event, in which I led the funding acquisition of over \$25,000 for over 6,000 guests to UCLA. I managed and coordinated the volunteers from over 42 different student groups, departments, and community partners for Exploring Your Universe.

Journey Through Our Universe

March 2013 – Present

Mentor: Sandra Dawson

I worked with the Thirty Meter Telescope (TMT)’s project management and outreach group to present hands-on outreach activities to five Hawaiian elementary school fourth-grade classes with the objective of bringing astronomy to a community where astronomy and telescopes are a large part of their lives. I additionally helped lead a family science day with TMT and gave an invited talk. This collaboration is done with outreach groups associated with the other telescopes in Hawaii, the University of Hawaii, and several educational groups.

AAS Ambassador’s Program

January 2014 – Present

I participated in this two-day professional development workshop that stressed effective ways of teaching and presenting outreach to the general public. Since attending this workshop, I have actively continued my education and public outreach efforts with the techniques taught in this workshop.

Astronomy Live! Summer Workshop

June 2014 – Present

I am co-director and developer for this summer program for high school students. I lectured on Adaptive Optics systems and mentored individual research projects and observing techniques for 6-10 high school students. The 6 students from our first year are continuing to pursue STEM fields in college.

Graduate Representative, Astronomy Division, UCLA

June 2013 - July 2015

I was nominated by my peers to serve as liaison between faculty and graduate students. I organized activities to facilitate interaction between graduate students and ~20 visiting prospective graduate students in March 2014 and March 2015.

REFERENCES

Professor Andrea M. Ghez
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