

Katelyn N. Allers

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EDUCATION

Doctorate of Philosophy in Astronomy (December 2005) *University of Texas at Austin*

Title: “*Disks and Dissociation Regions: The Interaction of Young Stellar Objects with their Environments*”

Advisor: Daniel T. Jaffe

Bachelor of Science in Physics (May 2000) *Whitworth University* (Magna cum Laude)

EMPLOYMENT

Full Professor: *Department of Physics and Astronomy; Bucknell University; 2020-present*

Associate Professor: *Department of Physics and Astronomy; Bucknell University; 2015-2020*

Assistant Professor: *Department of Physics and Astronomy; Bucknell University; 2009-2015*

Postdoctoral Researcher: *Institute for Astronomy; University of Hawai‘i; 2006-2009*

Research and Teaching Assistant: *University of Texas at Austin; Astronomy Department; 2000-2005*

Instrumentalist: *Washington and Texas Air National Guard; 1996-2002*

Project Manager Intern: *SIRTI Environmental Tech. Center; Spokane, WA; 1998-2000*

TEACHING EXPERIENCE

Bucknell University :

Classical and Modern Physics Lecture, Labs and Problem Sessions (Spring 2010-present): *Our general physics sequence for ~350 science, mathematics & engineering majors. Main lecturer in Spring 2015, 2017, 2018, & 2020. Transitioned the full course (labs, lectures, and recitations) to remote learning in Spring 2020.*

Integrated Perspectives: Extraterrestrial Life (Spring & Fall 2019): *A general-education course co-taught with a professor from another academic division exploring the concept of extraterrestrial life through semester long projects.*

Observational Astrophysics (Fall 2018) : *A project-based observational astronomy course intended for physics and engineering majors.*

Our Solar System (Fall 2009, 2010, 2011, Spring 2013, Fall 2016, Fall 2017) : *A non-major astronomy survey course, with a lab and observing component.*

Modern Optics (Spring 2011 & 2013): *An upper division course for physics majors.*

Energy and Sustainability (Spring 2014): *A non-major course on the physics of energy; including a lab and several field trips.*

University of Texas at Austin:

Astronomy Discovery Lab (Fall and Spring 2005): *A project-based non-major astronomy lab.*

Astronomical Instrumentation (Fall 2003 & Spring 2004): *An upper-division and graduate level course teaching the components (electronics, optics, mechanics, computer interfacing) of spectrograph design.*

Astronomical Observations (Spring 2001 & Fall 2002): *A non-major lab course teaching students the techniques of basic astronomical observations.*

RESEARCH INTERESTS

- Low-mass Stars and Brown Dwarfs
- Directly-Imaged Exoplanets
- Infrared Instrumentation and Data Reduction

GRANTS (\$634,930 as PI; \$1,500,281 as co-I)¹

Hubble Space Telescope (HST) Cycle 26 co-PI: “A search for sub-Jupiter mass companions to young planetary-mass brown dwarfs” **\$282,880**

The Royal Society Research Grant, 2018 Co-I: “Instant Confirmation and Characterisation of Exoplanets and Exoplanet Candidates with Water Absorption Imaging” **£16,500 (~\$21,000)**

Hubble Space Telescope (HST) Cycle 25 co-PI: “Looking for the Coldest Atmospheres: a Search for Planetary Mass Companions around T and Y Brown Dwarfs” **\$151,131**

HST Cycle 25 co-I: “The IMF to Planetary Masses Across the Milky Way” **\$739,100 / \$89,391**

NASA Keck Award 2017B PI: “A search for sub-Jupiter mass companions to young planetary mass brown dwarfs” **\$11,250**

HST Cycle 24 co-PI: “Confirming Planetary Mass Candidate Companions in Ophiuchus” **\$11,972**

Spitzer Space Telescope Cycle 12 PI: “Variability of Two Young L/T Transition Brown Dwarfs”. **\$10,000**

HST 23/Spitzer Space Telescope Cycle 12 Co-I: “Exometeorology: Characterizing Weather on a Young Free-Floating Planet” **\$26,973 / \$10,557**

The Royal Society Research Grant, 2014 Co-I: “Searching for the Lowest Mass Objects in Nearby Star-forming Regions with the W-band filter” **£15,000 (~\$24,000)**

NASA Keck Award 2014A PI: “Determining the Ages of Young Brown Dwarfs” **\$12,750**

Spitzer Space Telescope Cycle 9 Co-I: “A Proper-Motion Census of Star-Forming Regions in the Solar Neighborhood” **\$331,890 / \$26,000**

¹ Amounts listed for grants as Co-I are [Total Award] / [Bucknell Award]

National Science Foundation REU Grant Co-I: “*REU Site: Bucknell Summer Research Program in Physics & Astronomy*” **\$232,393 / \$232,393**

HST Cycle 20 PI: “*A High-Resolution Survey of the Very Youngest Brown Dwarfs*” **\$108,040**

HST Cycle 19 Co-I: “*Very Low-Mass Pleiades Binaries*” **\$60,708 / \$10,890**

Herschel Space Telescope OT1 Co-I: “*A Disk Census for New Low-Mass Members of TWA*” **\$15,000 / \$5000**

Spitzer Space Telescope Cycle 5 Co-I: “*Deep IRAC/MIPS Photometry of Candidate Young Planetary Mass Objects*” **\$18,400**

NASA Origins of Solar Systems Program Grant co-PI: “*Proto-planetary Disks Around the Lowest Mass Brown Dwarfs*” **\$46,907**

Spitzer Space Telescope Cycle 3 Co-I: “*Evolution and Structure of Very Low Mass Disks Around YSOs*” **\$30,817**

OBSERVING EXPERTISE

Optical Imaging: Subaru/Suprimecam, CTIO/MOSAIC-II, Gemini/GMOS, Hubble Space Telescope/WFC3

Near-Infrared Imaging: Keck/NIRC2+Laser Guide Star AO, UH88”/ULBCAM, UKIRT/WFCAM, CFHT/WIRCAM, CTIO/ISPI, ARC3.5/NICFPS

Near-Infrared Spectroscopy: Keck/OSIRIS+Laser Guide Star AO, Keck/NIRSPEC, IRTF/SpeX, Gemini/GNIRS, MMT/FIRE, ARC3.5/TripleSpec, CTIO/ARCoIRIS

Mid-Infrared Spectroscopy: Spitzer Space Telescope/IRS, IRTF/TEXES, Gemini/GNIRS

PROFESSIONAL SERVICE

Posse Foundation Bucknell DC Posse 14 Mentor (2018-present)

Bucknell University Faculty Council (2019-2020)

NASA Infrared Telescope Facility Time Allocation Committee (2018), Chair (2019)

Developed facility data reduction package for CTIO/ARCoIRIS and SOAR/TS4 (2015-2016 and 2019)

Bucknell University Adhoc Committee on Teaching Evaluation (2016-2017)

Spitzer Space Telescope Review Panel (2009, 2010, 2016), Panel Chair (2013)

National Optical Astronomy Observatory Time Allocation Committee (2015)

National Science Foundation Committee of Visitors (2014-15)

National Optical Astronomy Observatory Users Committee (2012-15)

Bucknell University Committee on Academic Freedom and Tenure (2012-14, co-chair 2014-15)

Hubble Space Telescope Review Panel (2013)

National Science Foundation Panelist (2010, 2011)

Referee: *Nature*, *The Astrophysical Journal*, *The Astrophysical Journal Letters*, *Astronomy and Astrophysics*, *Monthly Notices of the Royal Astronomical Society*

SELECTED PUBLICATIONS

Backyard Worlds: Planet 9 Discovery of an Unusual Low-mass Companion to an M Dwarf at 80 pc

Rothermich, A., Schneider, A., Faherty, J., Allers, K. et al. 2021, RNAAS, 5, 18

A Wide Planetary-mass Companion to a Young Low-mass Brown Dwarf in Ophiuchus

Fontanive, C., Allers, K., Pantoja, B., Biller, B. et al. 2020, ApJL, 905, L14

TSPEC4: near-IR spectroscopy for the SOAR telescope

Herter, T., Henderson, C., Bonati, M., Wilson, J., Allers, K. et al. 2020, SPIE, 11447, 6

A measurement of the wind speed on a brown dwarf

Allers, K., Vos, J., Biller, B. & Williams, P., 2020, Science, 369, 169.

A Novel Survey for Young Substellar Objects with the *W*-band Filter I. Filter Design and New Discoveries in Ophiuchus and Perseus.

Allers, K. & Liu, M. 2020, PASP, 132, 104401

A Novel Survey for Young Substellar Objects with the *W*-band Filter II. The Coolest and Lowest Mass Members of the Serpens-South Star-forming Region

Jose, J., Biller, B., Albert, L., Dubber, S., Allers, K. et al. 2020, ApJ, 892, 122

A Tool and Workflow for Radio Astronomical “Peeling” in CASA

Williams, P., Allers, K., Vos, J. & Biller, B., 2019, RNAAS, 7, 110

ACRONYM. III. Radial Velocities for 336 Candidate Young Low-mass Stars in the Solar Neighborhood, Including 77 Newly Confirmed Moving Group Members

Schneider, A., Shkolnik, E., Allers, K., et al. 2019, AJ, 157, 234

Methane in Analogs of Young Directly Imaged Exoplanets

Miles, B., Skemer, A., Barman, T., Allers, K. & Stone, J. 2018, ApJ, 869, 18

Constraining the multiplicity statistics of the coolest brown dwarfs: binary fraction continues to decrease with spectral type

Fontanive., C., Biller, B., Bonavita, M., Allers, K., 2018, MNRAS, 479, 2702

The Hawaii Infrared Parallax Program. III. 2MASS J0249-0557 c: A Wide Planetary-mass Companion to a Low-mass Binary in the β Pic Moving Group

Dupuy, T., Liu, M., Allers, K., Biller, B., et al. 2018 AJ 156, 57

An L Band Spectrum of the Coldest Brown Dwarf

Morley, C., Skemer, A., Allers, K., Marley, M. et al. 2018, ApJ, 858, 97

Variability of the lowest mass objects in the AB Doradus moving group

Vos, J., Allers, K., Biller, B., Liu, M., et al. 2018, MNRAS, 474, 1041

2MASS J13243553+6358281 is an Early T-type Planetary-mass Object in the AB Doradus Moving Group

Gagné, J., Allers, K., Theissen, C., Faherty, J., et al. 2018, ApJL, 854, 27

Simultaneous Multiwavelength Variability Characterization of the Free-floating Planetary-mass Object PSO J318.5-22

Biller, B., Vos, J., Buenzli, E., Allers, K., et al. 2018, AJ, 155, 95

All-sky Co-moving Recovery Of Nearby Young Members (ACRONYM). II. The β Pictoris Moving Group

Shkolnik, E., Allers, K., Kraus, A., Liu, C. & Flagg, L., 2017, AJ 154, 69

The Viewing Geometry of Brown Dwarfs Influences Their Observed Colors and Variability Amplitudes

Vos, J., Allers, K. & Biller B., 2017, ApJ, 842, 78

The Hawaii Infrared Parallax Program.II. Young Ultracool Field Dwarfs

Liu, M., Dupuy, T. & Allers, K., 2016, ApJ, 833, 96

The First Spectrum of the Coldest Brown Dwarf

Skemer, A. Morley, C., Allers, K., Geballe, T., et al. 2016, ApJL, 826, 2

Confirmation of PSO J318.5-22 as a Planetary-Mass Member of the β Pictoris Moving Group

Allers, K.N., Gallimore, J.F., Liu, M.C. & Dupuy, T.J., 2016, ApJ, 819, 133

On the Binary Frequency of the Lowest Mass Members of the Pleiades with Hubble Space Telescope Wide Field Camera 3

Garcia, E.V., Dupuy, T.J., Allers, K.N., Liu, M.C., et al. 2015, ApJ, 804, 65

WISEP J004701.06+680352.1: An Intermediate Surface Gravity, Dusty Brown Dwarf in AB Dor Moving Group

Gizis, J.E., Allers, K.N., Liu, M.C., Harris, H.C., et al. 2015, ApJ, 799, 203

Herschel/PACS view of disks around low mass stars and brown dwarfs in the TW Hya Association

Liu, Y., Herczeg, G.J., Gong, M., Allers, K.N., et al. 2015, A&A, 573, 63

A Stellar Census of the Tucana-Horologium Moving Group

Kraus, A.L., Shkolnik, E.L., Allers, K.N. & Liu, M.C., 2014, AJ, 147, 146

The Extremely Red, Young L Dwarf PSO J318.5338-22.8603: A Free-Floating Planetary-Mass Analog to Directly Imaged Young Gas-Giant Planets

Liu, M.C., Magnier, E.A., Deacon, N.R., Allers, K.N., et al. 2013, ApJL, 777, L20

A Near-Infrared Spectroscopic Study of Young Field Ultracool Dwarfs

Allers, K.N. & Liu, M.C., 2013, ApJ, 772, 79

A Keck LGS AO Search for Brown Dwarf and Planetary Mass Companions to Upper Scorpius Brown Dwarfs

Billie, B., Allers, K.N., Liu, M.C., Close, L.M., & Dupuy, T. 2011, ApJ, 730, 39

Discovery of a Young L Dwarf Binary, SDSS J224953.47+004404.6AB

Allers, K.N., Liu, M.C., Dupuy, T.J., & Cushing, M.C. 2010, ApJ, 715, 561

2MASS 22344161+4041387AB: A Wide, Young, Accreting, Low-Mass Binary in the LkHa233 Group

Allers, K.N., Liu, M.C., Shkolnik, E., Cushing, M.C., et al. 2009, ApJ, 697, 824

Submillimeter Observations of the Young Low-Mass Object IRAS 04158+2805

Andrew, S.M., Liu, M.C., Williams, J.P. & Allers, K.N. 2008, ApJ, 685, 1039

Four faint T dwarfs from the UKIRT Infrared Deep Sky Survey (UKIDSS) Southern Stripe:

Chiu, K., Liu, M.C., Jiang, L., Allers, K.N. et al. 2008, MNRAS, 385, L53

Ophiuchus 1622-2405: Not a Planetary-Mass Binary

Luhman, K.L., Allers, K.N., Jaffe, D.T., Cushing, M.C., et al. 2007, ApJ, 659, 1629

Characterizing Young Brown Dwarfs using Low-Resolution Near-Infrared Spectra

Allers, K.N. et al. 2007, ApJ, 657, 511

Young, Low-Mass Brown Dwarfs with Mid-Infrared Excesses

Allers, K.N., Kessler-Silacci, J.E., Cieza, L.A., & Jaffe, D.T. 2006, ApJ, 644, 364

H₂ Pure Rotational Lines in the Orion Bar

Allers K.N., Jaffe, D.T., Draine, B.T., Lacy, J.H., & Richter, M.J. 2005, ApJ, 630, 368