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**

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

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

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

Bucknell University Faculty Council (2019-present)
Posse Foundation Bucknell DC Posse 14 Mentor (2018-present)
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

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. *submitted to Publications of the Astronomical Society of the Pacific.*

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

Biller, 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 LkHα233 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

H_2 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