Mark J. Veyette

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Education

Doctor of Philosophy in Astronomy – Boston University — Expected: 2019

Master of Arts in Astronomy – Boston University — 2015

Bachelor of Science – University of Washington — 2012
Majors: Astronomy*, Physics | Minor: Mathematics
*Departmental Honors

Research Experience

Graduate Research Assistant – Boston University — 2014-
Advisor: Philip Muirhead
Developing empirical methods to determine chemical abundances and ages of M dwarf stars from high-resolution near-infrared spectroscopy. Developing the optical and mechanical design for NEWS, a high-resolution near-infrared spectrograph for the Discovery Channel Telescope.

Research Assistant – MIT Kavli Institute — 2017
Advisor: Roland Vanderspek
Performed focus calibration and verification testing for the Transiting Exoplanet Survey Satellite camera assemblies.

Student Researcher – University of Washington — 2011-2013
Advisor: Julianne Dalcanton
Identified and characterized 467 planetary nebulae in M31 from the Panchromatic Hubble Andromeda Treasury. Provided six-filter spectral energy distributions over 0.3-1.6 μm for 130 planetary nebulae.

Student Researcher – University of Washington — 2011-2012
Advisor: Željko Ivezić
Performed follow-up observations of SX Phoenicis stars identified in the LINEAR photometric catalog. Analyzed light curves and compared with LINEAR results.

Honors & Awards

Ages[2] Conference Registration Fee Waiver (€300)	2017
NASA Keck PI Data Award ($10,850)	2017
Massachusetts Space Grant Consortium Summer Fellowship ($2,750)	2016
Cool Stars 19 Best Graduate Student Poster Runner-up	2016
Cool Stars 19 Registration Fee Waiver ($493)	2016
AAS International Travel Grant ($1,400)	2016
NASA Keck PI Data Award ($12,500)	2016
SETI and NASA Astrobiology Institute IAU Travel Grant ($1,500)	2015
AAS International Travel Grant ($983)	2015
BU Graduate Student Organization Travel Grant ($500)	2015

Talks

Invited Talk – AAS #231 Special Session: Understanding Stellar Abundances in the Solar Neighborhood Using Large Online Catalogs — Jan. 2018
Invited Seminar – Harvard-Smithsonian CfA Exoplanet Lunch — Nov. 2017
Contributed Talk – Know Thy Star - Know Thy Planet, Pasadena, CA — Oct. 2017

Teaching, Mentoring, & Outreach

Teaching Fellow – Boston University — 2013-2016
Five semesters as a teaching assistant for undergraduate astronomy courses. Led labs and discussion sections for both physical sciences and non-science majors.

Mentor – Jack Lichtman, NSF REU Student — Sum. 2016
Oversaw mechanical design of cryostat for the NEWS spectrograph.

Co-organizer & Photographer – The Art of Astrophysics Competition — Feb. 2016

Mentor – Jia Ye, NSF REU Student — Sum. 2015
Oversaw optomechanical design for the NEWS spectrograph.

Volunteer – Boston University Public Open Night — 2014-

Volunteer – University of Washington Public Open Night — 2011-2012

Professional Service

LOC Member – Cool Stars 20 — 2017-2018
Executive Secretary – NASA Program Mission Science Review Panel

Professional Societies

American Astronomical Society
SPIE - The International Society for Optical Engineering

Courses & Workshops

BU Science Instrument Facility: Mechanical Design and Machining
Zemax Training Course: Optical System Design Using OpticStudio
Dunlap Institute Summer School 2014: Intro to Astronomical Instrumentation

Software

Languages – Python, IDL, Bash, Java, Android Mobile OS
Cluster Computing – BU Shared Computing Cluster at MGHPCC
Markup Languages – HTML, CSS, LaTeX
Reduction/Analysis Software – IRAF/PyRAF, Source Extractor, DS9 (XPA)
CAD Software – SolidWorks, AutoCAD
Optical System Design – Zemax OpticStudio

Telescope Time Awarded

MKO 10-meter Keck II (3 nights) – NIR spectroscopy with NIRSPEC
MKO 3-meter NASA IRTF (6 nights) – NIR spectroscopy with iSHELL & SpeX
Lowell Observatory 4.3-meter DCT (4 nights) – NIR spectroscopy with IGRINS
Manastash Ridge Observatory 0.8-meter (10 nights) – optical photometry

Selected Media Appearances

Searching for Life around the Stars – BU Today
http://www.bu.edu/today/2017/m-dwarf-stars/

Small Stars, Smaller Planets, Big Computing – MGHPCC Newsletter
http://www.mghpcc.org/small-stars-smaller-planets-big-computing/

TRAPPIST-1 discovery holds promise for BU astronomers – The Daily Free Press
http://dailyfreepress.com/2017/03/02/trappist-1-discovery-holds-promise-bu-astronomers/

Refereed Publications (ADS Link)

Veyette, + 5 co-authors (2017). A physically motivated and empirically calibrated method to measure effective temperature, metallicity, and Ti abundance of M dwarfs. ApJ

Kesseli, + 5 co-authors incl. **Veyette** (2017). An Empirical Template Library of Stellar Spectra for a Wide Range of Spectral Classes, Luminosity Classes, and Metallicities Using SDSS BOSS Spectra. ApJS, 230, 16

Veyette, + 3 co-authors (2016). The physical mechanism behind M dwarf metallicity indicators and the role of C and O abundances. ApJ, 828, 95

Dalba, + 5 co-authors incl. **Veyette** (2015). The Transit Transmission Spectrum of a Cold Gas Giant Planet. ApJ, 814, 154

Veyette, + 10 co-authors (2014). Panchromatic Hubble Andromeda Treasury IX: A Photometric Survey of Planetary Nebulae in M31. ApJ, 792, 121

Proceedings

Veyette, + 4 co-authors (2016). NEWS: the near-infrared Echelle for wideband spectroscopy. Proceedings of the SPIE, 9908, 99086M

Girardi, + 16 co-authors incl. **Veyette** (2015). TP-AGB stars in M31: Results from PHAT. ASP Conference Series, 497, 413

Muirhead, Hall, & **Veyette** (2014). HiJaK: the High-resolution J, H and K spectrometer. Proceedings of the SPIE, 9147, 91477T

Conference Abstracts

Kesseli, + 4 co-authors incl. **Veyette** (2017). PyHammer: An Automatic and Visual Suite for Spectral Typing Stars. AAS Meeting Abstracts, 229, 240.35

Muirhead, + 6 co-authors incl. **Veyette** (2017). The Puzzling Atmospheres of Low-mass Stars, Brown Dwarfs and Exoplanets Revealed by the Discovery Channel Telescope. AAS Meeting Abstracts, 229, 126.07

Veyette, et al. (2016). NEWS: the near-infrared Echelle for wideband spectroscopy. Proceedings of the SPIE, 9908, 99086M

Veyette, et al. (2016). The Physical Mechanism Behind M Dwarf Metallicity Indicators And The Role Of C and O Abundances. Cool Stars 19, 59

Dalba, + 5 co-authors incl. **Veyette** (2015). Saturn as a Transiting Exoplanet. AAS/Division for Planetary Sciences Meeting Abstracts, 47, 504.01

Veyette, et al. (2015). Testing the origin of compact exoplanetary systems around M dwarfs. IAU General Assembly, 22, 57462

Veyette, et al. (2015). Accurate Alpha Abundance and C/O of Low-mass Stars. AAS Meeting Abstracts, 225, 138.11

Muirhead, Hall, & **Veyette** (2014). HiJaK: the High-resolution J, H and K spectrometer. Proceedings of the SPIE, 9147, 91477T

Veyette, et al. (2012). The LINEAR Photometric Database: Time Domain Information for SDSS Objects. AAS Meeting Abstracts, 219, 348.19