

Elisabeth R. Newton

Curriculum Vitae

CONTACT

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EDUCATION

Harvard University, Cambridge, MA USA

Ph.D., Astronomy and Astrophysics, May 2016

Thesis: “The Evolution of Rotation and Magnetism in Small Stars Near the Sun”

University of California, Santa Barbara, Santa Barbara, CA USA

B.S., Physics (College of Creative Studies), June 2009, *with Highest Honors*

Thesis: “Finding and Modeling Gravitational Lenses”

REFEREED PUBLICATIONS (FIRST AUTHOR, 6 TOTAL)

Newton, E.R. et al., “The impact of stellar rotation on the detectability of habitable planets around M dwarfs,” 2016, *ApJL* 821, 19

Newton, E.R. et al., “The rotation and Galactic kinematics of mid M dwarfs in the Solar Neighborhood,” 2016, *ApJ* 821, 93

Newton, E.R. et al., “An empirical calibration to estimate M dwarf fundamental parameters from H-band spectra,” 2015, *ApJ* 800, 85

Newton, E.R. et al., “Near-infrared metallicities, radial velocities and spectral types for 447 nearby M dwarfs,” 2014, *AJ* 147, 20

Newton, E.R. et al., “The Sloan Lens ACS Survey. XI. Beyond Hubble resolution: the size-mass relation of compact lensed galaxies at intermediate redshift,” 2011, *ApJ* 734, 104

Newton, E.R.; Marshall, P.J.; and Treu, T., “Enhanced lensing rate by clustering of massive galaxies: newly discovered systems in the SLACS fields,” 2009, *ApJ* 696, 1125

REFEREED PUBLICATIONS (CO-AUTHOR, 6 TOTAL)

Mann, A.W., **Newton, E.R.**, Rizzuto, A.C, Irwin, J. et al., “Zodiacal Exoplanets in Time (ZEIT) III: A Neptune-sized planet orbiting a pre-main sequence star in the Upper Scorpius OB Association,” *AJ* 152, 61

Dittmann, J.A.; Irwin, J.; Charbonneau, D.; and **Newton, E.R.** “Calibration of the MEarth photometric system: optical magnitudes and photometric metallicity estimates for 1844 nearby M dwarfs,” 2016, ApJ 818, 153

Berta-Thompson, Z., Irwin, J., Charbonneau, D., **Newton, E.R.** et al., “A rocky planet transiting a nearby, low-mass star,” 2015, Nature 527, 204

Torres, G. & 25 coauthors including **Newton, E.R.**, “Validation of twelve small Kepler transiting planets in the habitable zone,” 2015, ApJ 800, 99

Ballard, S. & 15 coauthors including **Newton, E.R.**, “Exoplanet characterization by proxy: a transiting 2.15 Earth-radius planet near the habitable zone of the late K dwarf Kepler-61,” 2013, ApJ 773, 2

Foley, R. & 23 coauthors including **Newton, E.R.**, “The First Maximum-light Ultraviolet through Near-infrared Spectrum of a Type Ia Supernova,” 2012, ApJ 753L, 5

GRANTS AND FUNDING

Principal Investigator, *Hubble Space Telescope*

“The Evaporating Exosphere of a Young Exoplanet” Cycle 24, 16 orbits

Co-Investigator, *Spitzer Space Telescope*

106 hours, Proposal 13037 (PI: A. Mann)

National Science Foundation Astronomy and Astrophysics Postdoctoral Fellowship

“The Physics of the Smallest Stars and the Planets That Orbit Them” Award 1602597, \$267K

Co-Investigator, *Chandra/Swift*

“Understanding the Rotation/Activity Relation: A New Low-Mass, Extreme-Spin Sample”

Cycle 17, \$92K, Proposal 17200636 (PI: Williams)

TEACHING AND ADVISING

Students Supervised:

H. Pegeus, Banneker Institute (Summer 2016)

I. Nisley, MIT senior thesis, co-supervised (Sept. 2016 - present)

Teaching Fellow, The Astronomy Research Seminar, Harvard University (Aug. 2012 - Dec. 2012); *helped design new observation-based freshman seminar; prepared and led coding tutorials and twice weekly observing sessions*

Teaching Fellow, Introductory Astronomy, Harvard University (Jan. - May 2011, Jan. - May 2012)

Volunteer Teacher, Science Club for Girls (Feb. - May 2012, 2013); *co-leader for a weekly science club at a public middle school in Cambridge, piloting a new astronomy curriculum*

Group tutorial leader, Campus Learning Assistance Services, UC Santa Barbara (Sept. 2008 - June 2009); *planned and delivered lectures, worked examples, and activities as sole leader of a twice-weekly group tutorial*

GROUND-BASED OBSERVING EXPERIENCE

Principal Investigator, NASA Infrared Telescope Facility (IRTF)

“Abundances of M Dwarfs in the solar neighborhood”

4 nights (2011A, PI: Irwin), 3.5 nights (2011B), 4 nights (2012A), 4 nights (2012B)
infrared echelle spectrograph on a 3-m infrared telescope on Mauna Kea

Principal Investigator, Magellan/Baade Telescope

“Properties of M dwarfs targeted by MEarth-South”

2 nights (2011A, PI: Irwin), 3 nights (2011B), 3 nights (2012A), 3 nights (2012B)
infrared echelle spectrograph on a 6.5-m telescope at Las Campanas Observatory

Principal Investigator, Tillinghast 60-inch

“Activity, metallicity, and rotation in mid-to-late M dwarfs”

5 nights each in 2015A, 2015B, and 2015C

optical spectrograph on a 1.5-m telescope at Fred Lawrence Whipple Observatory

Co-Investigator, 48-inch

“Absolute Sloan photometry for the MEarth M dwarfs”

7 nights each in 2014C, 2015A, and 2015B (PI: Dittmann)

optical CCD on a 1.2-m telescope at Fred Lawrence Whipple Observatory

Co-Investigator, IRTF

“Characterizing low-mass stars hosting small planets”

4 nights (2015B, PI: Dressing)

Co-Investigator, Magellan/Baade Telescope

“NIR spectroscopic follow-up of K2 mid-M dwarf planet hosts”

1 night (2015A, PI: Vanderburg), 2 nights (2015B, PI: Vanderburg)

SERVICE

TESS Open Cluster Survey working group member (Sept. 2016 - present)

Referee for professional journals (2013 - present)

Mentor, WISTEM (undergraduates), Harvard Astro (graduates), (Sept. 2012 - May 2014)

Harvard Graduate Women in Science, board member (Aug. 2011 - May 2014)

OUTREACH

Astrobites Blog Co-founder, contributor, and board member, astrobites.com (Nov. 2010 - June 2015)

- *daily blog aimed at undergraduates with readership in excess of 10,000 unique visitors*

- *published 57 articles on recent results in astrophysics and personal experiences*

Communicating Science Workshop series Co-founder, LOC and POC member, comscicon.com (Sept. 2012 - June 2014)

- *ongoing workshop series for graduate students, drawing around 1000 applicants annually*

- *national conferences in 2013 (LOC, POC) and 2014 (POC), local conference in 2014 (LOC)*

Harvard Observing Project Co-founder, organizer (Aug. 2011 - May 2014),

- *open observing nights for undergraduates from all majors, focusing on a specific scientific goal*

AWARDS AND HONORS

National Science Foundation Postdoctoral Fellow (2016-present)
Fireman Fellow, Harvard University Dept. of Astronomy (2016)
Hubble Fellow, declined (2016)
Harvard Horizons Scholar, Harvard University (2015)
National Science Foundation Graduate Fellowship, Harvard University (2010-2013)
Harvard Bok Center for Teaching and Learning, Distinction in Teaching Award (2011)

INVITED TALKS

“Spin and Magnetism in Cool Stars,”
UT Austin Astronomy Colloquium, Austin TX (9/27/2016)
“Rotation and Activity in M dwarfs: the Implications for Exoplanet Surveys,”
Operation M, Cambridge MA (8/29/2016)
“The Fundamental Physical Properties of M Dwarfs in the Solar Neighborhood,”
Boston University, Boston MA (10/6/2015)
“The Rotation of M Dwarfs in the Solar Neighborhood and the Prospects for Gyrochronology”
Harvard-Smithsonian CfA Stars and Planets Seminar, Cambridge MA (9/14/2015)
“M Dwarfs in the MEarth Project,”
U. of Chicago (12/12/2014)
“Properties of M Dwarf Exoplanet Planet Hosts Based on Their Near-Infrared Spectra,”
Geneva Observatory (3/21/2014)

CONTRIBUTED TALKS

“The Evolution of Rotation and Magnetism in Fully Convective M dwarfs,”
Cool Stars 19, Uppsala (7/8/2016)
“Temperatures and Radii of Low-Mass Dwarf Stars Estimated from Near Infrared Spectra,”
Cool Stars 18, Flagstaff AZ (6/9/2014)
“Empirical Estimates of Fundamental Properties for Nearby M Dwarfs Based on Near Infrared Spectra”
AAS 223, Washington D.C. (1/7/2014)
“Metallicities of M dwarfs Targeted by the MEarth Transiting Planet Survey,”
Transiting Planets in the House of the Sun, Maui, HI (6/6/2012)
“Metallicities of M dwarfs Targeted by the MEarth Transiting Planet Survey,”
AAS 219, Austin, TX (1/11/2012)

PUBLIC TALKS

- “Shedding Light on Red Dwarf Worlds,” Harvard Horizons Symposium (5/6/2015)
youtu.be/VgI8e21XjlE
- “The Exoplanet Era,” Aldrich Astronomical Society (2/28/2015)
- “The Exoplanet Express,” Cambridge City-Wide Senior Center Cosmos lecture series (1/13/2015)
- “Red Dwarf Worlds,” Harvard-Smithsonian Center for Astrophysics Observatory Night (10/16/2014)
youtu.be/hQ3tdm.onwY?t=15m18s
- “Gravitational Lensing and Dark Matter: Life, the Universe and (Almost) Everything,” New Hampshire Astronomical Society (8/17/2012)
- “The Evolution of the Universe: from Cosmic Soup to Planet Earth,” Harvard Science in the News Lecture Series (10/26/2011)

CONFERENCE PROCEEDINGS

- Newton, E.R.** et al. “The evolution of rotation and magnetism in fully convective M dwarfs,” 2016, Proceedings of the 19th Cambridge Meeting on Cool Stars, DOI 10.5281/zenodo.153997
- Newton, E.R.** et al. “Rotation periods of nearby, mid-to-late M dwarfs from the MEarth Project,” Proceedings of the International Astronomical Union 314, 124
- Mann, A.W. & 13 coauthors including **Newton, E.R.** “Touchstone stars: highlights from the Cool Stars 18 splinter session,” 2014, Proceedings of the 18th Cambridge Meeting on Cool Stars, pp.80-104
- Irwin, J.; Berta-Thompson, Z.K.; Charbonneau, D.; Dittmann, J.A.; Falco, E.E.; **Newton, E.R.**; and Nutzman, P. “The MEarth-North and MEarth-South transit surveys: searching for habitable super-Earth exoplanets around nearby M dwarfs,” 2014, Proceedings of the 18th Cambridge Meeting on Cool Stars, pp.767-772