

Kathryn Forbes Neugent

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Education

University of Washington, 2017 - present

Seattle, Washington

M.S. Degree in Astronomy

Current PhD Candidate in Astronomy

IGERT (Integrative Graduate Education and Research Traineeship) Scholar

Northern Arizona University, 2015 - 2017

Flagstaff, Arizona

M.S. Degree with Distinction in Applied Physics with an emphasis on Astronomy

George Washington University, 2010 - 2012

Washington D. C.

M.S. Degree in Computer Science

Certificate in Cyber Security and Information Assurance

National Science Foundation's Scholarship for Service Cyber Corps participant

Wellesley College, 2006 - 2010

Wellesley, Massachusetts

B.A. Degrees in Computer Science and Astronomy

Research

Research Associate, Lowell Observatory, 2009 - present

Flagstaff, Arizona

Research massive stars in the Local Group with Dr. Philip Massey.

MANOS Team Member, Lowell Observatory, 2014 - 2015

Flagstaff, Arizona

Created an image reduction pipeline for Mission Accessible Near-Earth Object Survey (MANOS) data with Dr. Nick Moskovitz.

Astronomy Research Student, Wellesley College, 2009

Wellesley, Massachusetts

Studied the azimuthal brightness variations in Saturn's rings using VIMS Cassini data with Dr. Richard French.

MIT / Wellesley Field Camp Participant, Lowell Observatory, 2008

Flagstaff, Arizona

Characterized a Xenix CCD with Dr. Henry Roe.

Astronomy Department Researcher, Wellesley College, 2007 - 2008

Wellesley, Massachusetts

Studied Koronis family asteroids to improve size estimates and determine rotation periods with Dr. Steve Slivan.

Work

Senior Web Security Specialist, National Renewable Energy Lab, 2014 - 2015

Golden, Colorado

Assessed the vulnerability of web applications. Helped manage the web application firewall. Conducted site-wide phishing exercises. Participated in incident response events.

Cyber Security Engineer, MITRE Corporation, 2012 - 2013

Colorado Springs, Colorado

Assessed the vulnerability of government systems, specifically web applications. Worked as part of a team to formulate and execute test plans for open source software. Developed a test plan framework for a classified client.

Teaching

Graduate Teaching Assistant, University of Washington, 2020 - present

Seattle, Washington

Graduate Teaching Assistant, Northern Arizona University, 2015 - 2016

Flagstaff, Arizona

Whitin Observatory Teaching Assistant, Wellesley College, 2006 - 2009

Wellesley, Massachusetts

Computer Science Teaching Assistant, Wellesley College, 2008

Wellesley, Massachusetts

Leadership and Outreach

Research Advisor: Currently mentoring Tzvetelina Dimitrova, UW undergraduate

Apache Point Observatory Telescope Allocation Committee: 2018 - Present

UW Planetarium Presenter: 2017 - Present

Skype a Scientist: 2020 - Present

Referee for A&A, ApJ, AJ, and MNRAS

Seattle Area Feline Rescue: 2020 - Present

Look What The Cat Brought In Board Member: 2014 - Present

Wellesley College Alumn Admissions Interviewer: 2018 - Present

First-Authored Publications

- 15) **Neugent, K.F.**, Levesque, E.M., Massey, P., Morrell, N. I., & Drout, M. R., 2020, “The Red Supergiant Binary Fraction in the Large Magellanic Cloud,” ApJ, accepted
- 14) **Neugent, K. F.**, Massey, P., Georgy, C., Drout, M. R., Mommert, M., Levesque, E. M., Meynet, G., & Ekstrom, S., 2020, “The Luminosity Function of Red Supergiants in M31,” ApJ, 889, 1
- 13) **Neugent, K. F.**, & Massey, P., 2019, “The Wolf-Rayet Content of the Galaxies of the Local Group and Beyond,” Review paper in MDPI Galaxies special issue on “Luminous Stars in Nearby Galaxies”
- 12) **Neugent, K. F.**, Levesque, E. M., Massey, P., & Morrell, N. I., 2019, “Binary Red Supergiants II: Discovering and Characterizing B-type Companions,” ApJ, 875, 124
- 11) **Neugent, K. F.**, Levesque, E. M., & Massey, P., 2018, “Binary Red Supergiants: A New Method for Detecting B-type Companions,” AJ, 156, 5
- 10) **Neugent, K. F.**, Massey, P., & Morrell, N. I., 2018, “A Modern Search for Wolf-Rayet Stars in the Magellanic Clouds. IV. A Final Census,” ApJ, 863, 181
- 9) **Neugent, K. F.**, Massey, P., Morrell, N. I., Skiff, B., & Georgy, C., 2018, “A Runaway Yellow Supergiant Star in the Small Magellanic Cloud,” AJ, 155, 207
- 8) **Neugent, K. F.**, Massey, P., Hillier, D. J., & Morrell, N. I. 2017, “The Evolution and Physical Parameters of WN3/O3s: a New Type of Wolf-Rayet Star,” ApJ, 841, 20
- 7) **Neugent, K. F.**, & Massey, P. 2014, “The Close Binary Frequency of Wolf-Rayet Stars as a Function of Metallicity in M31 and M33,” ApJ, 789, 10
- 6) **Neugent, K. F.**, Massey, P., & Morrell, N. I. 2012, “The Discovery of a Rare WO-type Wolf Rayet Star in the Large Magellanic Cloud,” AJ, 144, 162
- 5) **Neugent, K. F.**, Massey, P., & Georgy, C. 2012, “The Wolf-Rayet Content of M31,” ApJ, 759, 11
- 4) **Neugent, K. F.**, Massey, P., Skiff, B., & Meynet, G. 2012 “Yellow Supergiants in the Large Magellanic Cloud,” ApJ, 749, 177
- 3) **Neugent, K. F.**, & Massey, P. 2011, “The Wolf-Rayet Content of M33,” ApJ, 733, 123
- 2) **Neugent, K. F.**, & Massey, P. 2010, “The Spectrum of the Night Sky over Kitt Peak: Changes Over Two Decades,” PASP, 122, 1246

- 1) **Neugent, K. F.**, Massey, P., Skiff, B., Meynet, G., & Olsen, K. A. F. 2010, “Yellow Supergiants in the Small Magellanic Cloud: Putting Current Evolutionary Theory to the Test,” *ApJ*, 719, 1784

Co-Authored Publications

- 12) Dorn-Wallenstein, T. Z., Levesque, E. M., **Neugent, K. F.**, Davenport, J. R. A., Morris, B. M., & Gooch, K., 2020, “Short Term Variability of Evolved Massive Stars with *TESS* II: A New Class of Cool, Pulsating Supergiants,” *ApJ*, accepted
- 11) Margon, B., Massey, P., **Neugent, K. F.**, & Morrell, N., 2020, “A Survey for C II Emission-Line Stars in the Large Magellanic Cloud,” *ApJ*, 898, 85
- 10) Massey, P., **Neugent, K. F.**, & Levesque, E. M., 2019, “The Discovery of Quasi-stellar Objects behind M31 and M33,” *AJ*, 157, 227
- 9) Aadland, E., Massey, P., **Neugent, K. F.**, & Drout, M. R., 2018, “Shedding Light on the Isolation of Luminous Blue Variables,” *AJ*, 156, 294
- 8) Massey, P., Levine, S. E., **Neugent, K. F.**, Levesque, E. M., Morrell, N. I., & Skiff, B., 2018, “A Runaway Giant in the Galactic Halo,” *AJ*, 156, 265
- 7) Massey, P., **Neugent, K. F.**, & Morrell, N. I. 2017, “A Modern Search for Wolf-Rayet Stars in the Magellanic Clouds. III. A Third Year of Discoveries,” *ApJ*, 837, 122
- 6) Massey, P., **Neugent, K. F.**, & Smart, B. M. 2016, “A Spectroscopic Survey of Massive Stars in M31 and M33,” *AJ*, 152, 62
- 5) Massey, P., **Neugent, K. F.**, & Morrell, N. I. 2015, “A Modern Search for Wolf-Rayet Stars in the Magellanic Clouds. II. A Second Year of Discoveries,” *ApJ*, 807, 81
- 4) Morrell, N. I., Massey, P., **Neugent, K. F.**, Penny, L. R., & Gies, D. R. 2014, “Photometric and Spectroscopic Studies of Massive Binaries in the Large Magellanic Cloud. II. Three O-type Systems in the 30 For Region,” *ApJ*, 789, 139
- 3) Massey, P., **Neugent, K. F.**, Morrell, N., & Hillier, D. J. 2014, “A Modern Search for Wolf-Rayet Stars in the Magellanic Clouds: First Results,” *ApJ*, 788, 83
- 2) Massey, P., **Neugent, K. F.**, Hillier, D. J., & Puls, J. 2013, “A Bake-off Between CM-FGEN and FASTWIND: Modeling the Physical Properties of SMC and LMC O-type Stars,” *ApJ*, 768, 6
- 1) Massey, P., Morrell, N. I., **Neugent, K. F.**, Penny, L. R., DeGioia-Eastwood, K., &

Gies, D. R. 2012, “Photometric and Spectroscopic Studies of Massive Binaries in the Large Magellanic Cloud. I. Introduction and Orbits for Two Detached Systems: Evidence for a Mass Discrepancy?” *ApJ*, 748, 96

Conference Proceedings

November 2020 (postponed due to COVID-19 until 2021): “Wolf-Rayet Populations” at The Wolf-Rayet phenomenon in the Universe in Mexico. (**invited talk**)

July 2020: “The Binary Fraction of Red Supergiants” at the MOBSTER-1 Virtual Conference. (contributed talk)

May 2020 (postponed due to COVID-19 until 2021): “The Binary Fraction of Red Supergiants” at Massive Stars Near and Far in Ireland. IAUS 361. (**invited talk**)

May 2019, “Binary Red Supergiants: A New Method for Detecting B-type Companions,” MMT’s 40th Anniversary Conference. (talk)

January 2019, “Binary Red Supergiants: A New Method for Detecting B-type Companions,” AAS Meeting #233. (poster)

November 2018, “Surveys and Populations of Wolf-Rayet Stars”, NidiaFest (**invited talk**)

January 2018, “A Runaway Yellow Supergiant Star in the Small Magellanic Cloud”, AAS Meeting #231 (poster)

June 2017, “A new type of Wolf-Rayet star: A possible progenitor to Type Ic-BL supernovae and long duration GRBs”, EWASS (**invited talk**)

November 2016, “The Evolutionary Status of WN3/O3 Wolf-Rayet Stars”, IAU, 329 (talk)

June 2016, “WN3/O3 Wolf-Rayet Stars; Examples of Homogeneous Evolution? at Bridging the gap: from massive stars to supernovae at Chicheley Hall, England (poster)

July 2015, “The Discovery and Physical Parameterization of a New Type of Wolf-Rayet Star,” International Workshop on Wolf-Rayet Stars in Potsdam, Germany (talk)

June 2014, “The Close Binary Frequency of Wolf-Rayet Stars as a Function of Metallicity in M31 and M33,” IAU, 307, 127 (poster)

June 2013, “The Wolf-Rayet Content of Local Group Galaxies,” Massive Stars: From Alpha to Omega in Rhodes, Greece (talk)

May 2011, “Wolf-Rayet Stars in the Local Group,” AAS Meeting #218 (poster)

January 2010, “Determining the Physical Parameters of Massive Stars in the SMC and LMC,” AAS Meeting #215 (poster)

Talks & Colloquia

September 2020: **The Binary Fraction of Red Supergiants in the Local Group Galaxies** for Harvard / CfA’s Galaxies & Cosmology Seminar

September 2020: **The Binary Fraction of Red Supergiants in the Local Group Galaxies** for a Florida Tech colloquium

June 2020: **Wolf-Rayet Stars: Hot, Massive and Luminous!** for Lowell Observatory’s “Meet An Astronomer” Live YouTube series

April 2020: **Binary Red Supergiants** for Lowell Observatory’s “Meet An Astronomer” Live YouTube series

October 2019: **The Extragalactic Runaway Yellow Supergiant That Wasn’t (but was something even better)** at Seattle’s Astronomy on Tap

April 2019: **Why it is difficult to be an observational astronomer in Seattle** for the Theodor Jacobson Observatory

July 2018: **Wolf-Rayet Stars in the Local Group Galaxies** for a Geneva University, Switzerland colloquium

October 2016: **Wolf-Rayet Stars in the Local Group Galaxies** for a Colorado University: Boulder lunch colloquium

October 2016: **Wolf-Rayet Stars in the Local Group Galaxies** for a University of Washington lunch colloquium

Telescope Time as PI*/co-PI

Telescope	Instrument	# Nights
Gemini 8m*	GMOS	4.5
MMT 6.5m*	Hectospec	18
Magellan (Clay and Baade) 6.5m	IMACS, MagE, FIRE	20
Lowell Discovery Telescope 4.3m*	LMI, EXPRES	14
Apache Point 3.5m*	DIS	1.5
Kitt Peak 2.1m	Gold Spectrograph	5
Swope 1m	CCD	45

Funding

2019 - HST Cycle 25 STIS - 16 orbits, “A First Investigation of the UV Extinction Properties of Interstellar Dust in M33” (Co-I)

2018 - Sigma Xi Grants-in-Aid of Research

2017 - ADAP, “The Fundamental Physical Properties of Wolf-Rayet Stars” (Co-I)

2016 - AAS International Travel grant

2016 - HST Cycle 24 STIS - 30 orbits, “Mapping the UV Extinction Properties of PHAT Stars in M31” (Co-I)

2016 - HST Cycle 24 WFC3/UVIS SNAP - 33 orbits, “Searching for the Most Massive Stars in M31 and M33” (Co-I)

2014 - HST Cycle 22 COS and STIS - 9 orbits, “WO-Type Wolf-Rayet Stars: the Last Hurrah of the Most Massive Stars?” (Co-I)

2014 - HST Cycle 22 COS - 6 orbits, “The Nature of Newly Discovered Wolf-Rayet Stars in the LMC” (Co-I)

2012 - HST Cycle 20 WFC3/UVIS SNAP - 20 orbits, “The Unevolved Massive Star Content of the Magellanic Clouds” (Co-I)