

# Kathryn Forbes Neugent

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## Education

**University of Washington, 2017 - present**

*Seattle, Washington*

PhD student in Astronomy

**Northern Arizona University, 2015 - 2017**

*Flagstaff, Arizona*

M.S. Degree 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. Projects include:

- Characterizing the physical properties of a new type of Wolf-Rayet star
- Determining the periods of O-type binaries and using the results to estimate the stars' masses
- Surveying M31, M33 and the Magellanic Clouds for Wolf-Rayet Stars
- Comparing the spectral modeling programs CMFGEN and FASTWIND by modeling O-type stars in the Magellanic Clouds
- Using yellow and red supergiants in the Magellanic Clouds to test current stellar evolutionary theory

**MANOS Team Member, Lowell Observatory, 2014 - 2015**

*Flagstaff, Arizona*

Created an image reduction pipeline in IRAF for Mission Accessible Near-Earth Object Survey (MANOS) data. Images were taken using the Large Monolithic Imager on Lowell's Discovery Channel Telescope, PRISM on Lowell's 72-inch Perkins telescope, MOSAIC on Kitt Peak's Mayall 4-m, ANDICAM on the CTIO 1.3-m, and NOAO's SOAR telescope.

**Astronomy Research Student, Wellesley College, 2009**

*Wellesley, Massachusetts*

Studied the azimuthal brightness variations in Saturn's rings using VIMS Cassini data.

**MIT / Wellesley Field Camp Participant, Lowell Observatory, 2008**

*Flagstaff, Arizona*

Worked with Henry Roe to characterize the Xenix CCD which is now used to monitor Titan's clouds on a nightly basis.

**Astronomy Department Researcher, Wellesley College, 2007 - 2008**

*Wellesley, Massachusetts*

Studied Koronis family asteroids to improve size estimates and determine rotation periods using Whitin's 24-inch telescope for image collection, and IRAF for data processing. Published results in the Minor Planet Bulletin.

## **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.

**Bioinformatics Intern, MITRE Corporation, 2011 - 2012**

*McLean, Virginia*

Developed and programmed a face recognition program in R based on transforming human descriptors (round head, big nose) into geometric descriptors.

**Information Services Consultant Manager, Wellesley College, 2007 - 2010**

*Wellesley, Massachusetts*

Troubleshoot and fixed student and faculty computers on campus through one-on-one sessions and phone support. Common issues: network problems, viruses, and spyware.

**Whitin Observatory Assistant and Observer, Wellesley College, 2006 - 2009**

*Wellesley, Massachusetts*

Collected data for faculty's research using Whitin's 24-inch telescope during 50+ nights of observing time. Performed administrative tasks for the department.

**Wargaming and Analysis Intern, Booz Allen Hamilton, 2008**

*Rosslyn, Virginia*

Helped develop a questionnaire tool for the US Navy using Microsoft Access, VB, and SQL programming. Improved a GUI for the US Air Force using JAVA.

## Teaching

**Graduate Teaching Assistant, Northern Arizona University, 2015 - 2016**

*Flagstaff, Arizona*

Taught undergraduate introductory Physics (mechanics) and Astronomy labs.

**Whitin Observatory Teaching Assistant, Wellesley College, 2006 - 2009**

*Wellesley, Massachusetts*

Assisted students during introductory astronomy indoor and outdoor lab sessions. Operated 100-year-old Clark refractors and 8-inch Meade LX200s.

**Computer Science Teaching Assistant, Wellesley College, 2008**

*Wellesley, Massachusetts*

Tutored computer science students and assisted faculty by grading homework and holding office hours to answer student's questions.

**SAT Test Prep Instructor, Framingham High School, 2007 - 2008**

*Framingham, Massachusetts*

Taught 25 low-income High School Juniors SAT Verbal skills during weekly 2-hour-long sessions. Assigned and graded homework, and prepared classes.

## Leadership

**Look What The Cat Brought In**

Current board member of local cat rescue shelter.

**Wellesley College ASTRO Club**

Past secretary, Treasurer and President

**Wellesley College Choir**

Past rehearsal manager, Business Manager and President

## Other Qualifications

**Computer**

*Experienced with:* Microsoft Suite, Adobe Suite

*Languages:* JAVA, JavaScript, SQL, Python, PHP, FORTRAN

*Scientific Languages:* MatLab, IDL, IRAF, R

*Familiar with:* Windows, OSX, and Unix / Linux Operating Systems

## Memberships

American Astronomical Society Junior Member

Associate of (ISC)<sup>2</sup> towards Certified Information Systems Security Professional

## Publications

**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

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

Massey, P., **Neugent, K. F.**, & Smart, B. M. 2016, “A Spectroscopic Survey of Massive Stars in M31 and M33,” AJ, 152, 62

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

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

**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

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

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

**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

**Neugent, K. F.**, Massey, P., & Georgy, C. 2012, “The Wolf-Rayet Content of M31,” ApJ, 759, 11

**Neugent, K. F.**, Massey, P., Skiff, B., & Meynet, G. 2012 “Yellow Supergiants in the Large Magellanic Cloud,” ApJ, 749, 177

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

**Neugent, K. F.**, & Massey, P. 2011, "The Wolf-Rayet Content of M33," ApJ, 733, 123

**Neugent, K. F.**, & Massey, P. 2010, "The Spectrum of the Night Sky over Kitt Peak: Changes Over Two Decades," PASP, 122, 1246

**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

## Conference Proceedings

**Neugent, K. F.**, & Massey, P. 2017, "A new type of Wolf-Rayet star: A possible progenitor to Type Ic-BL supernovae and long duration GRBs", EWASS (talk)

**Neugent, K. F.**, Massey, P., Hillier, D. J., & Morrell, N. I. 2016, "The Evolutionary Status of WN3/O3 Wolf-Rayet Stars", IAU, 329 (talk)

**Neugent, K. F.**, Massey, P., Hillier, D. J., & Morrell, N. I. 2015, "The Discovery and Physical Parameterization of a New Type of Wolf-Rayet Star," International Workshop on Wolf-Rayet Stars in Potsdam, Germany (talk)

Massey, P., **Neugent, K. F.**, Morrell, N. I. 2015, "Finding Wolf-Rayet Stars in the Local Group," International Workshop on Wolf-Rayet Stars in Potsdam, Germany

**Neugent, K. F.**, & Massey, P. 2015, "The Close Binary Frequency of Wolf-Rayet Stars as a Function of Metallicity in M31 and M33," IAU, 307, 127 (poster)

Massey, P., **Neugent, K. F.**, Morrell, N., & Hillier, D. J. 2015, "A New Class of Wolf-Rayet Stars: WN3/O3s," IAU, 307, 64

**Neugent, K. F.**, Massey, P., Meynet, G., & Georgy, C. 2013, "The Wolf-Rayet Content of Local Group Galaxies," Massive Stars: From Alpha to Omega in Rhodes, Greece (talk)

**Neugent, K. F.**, Massey, P. 2011, "Wolf-Rayet Stars in the Local Group," AAS Meeting #218 (poster)

**Neugent, K. F.**, Massey, P., & Hillier, D. J. 2010, "Determining the Physical Parameters of Massive Stars in the SMC and LMC," AAS Meeting #215 (poster)