

CONTACT  
INFORMATION

SETI Institute  
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CAREER  
OBJECTIVE

Drive ground-breaking technical developments in Astronomy leveraging a team-based position, with emphasis on implementing Lean and Agile principles to make the complex simple.

## EDUCATION

**New Mexico State University** (NMSU), Las Cruces, NM

Ph.D., Astronomy. September 2012.

M.S., Astronomy, with Honors. May 2010.

**Emory University**, Atlanta, GA

B.S., Physics & Astronomy, Minor in Spanish, Summa cum Laude. May 2007.

## AWARDS

**NASA's Exceptional Engineering Achievement Medal** (2016)

- For leadership and innovation in the construction of the first uniform *Kepler* planet candidate catalog

**National Science Foundation (NSF) Graduate Research Fellow** (2009)

**NASA Graduate Student Research Program Fellowship** (2009, Declined)

**NMSU Astronomy ZIA Research** (2009) and **Murrell Professional Development** (2012) **Awards**

SPECIAL  
SKILLS**Computing and Programming**

- Professional use of C/C++, Python, MATLAB, AWK, Unix tools and shell scripting, HTML/CSS/CGI, JIRA, GIT, SVN, Gnuplot, L<sup>A</sup>T<sub>E</sub>X, Word/Excel, Linux, Mac OSX, and Windows.
- Special experience with workflow automation, pipeline validation, optimization of multi-parameter models, genetic algorithms, large dataset processing, PCA/SVD, and robust statistical inference.

**Technical Communication**

- 10 first-author and 10<sup>+</sup> co-author publications in peer-reviewed journals. ([Link to List](#))
- 30<sup>+</sup> talks and posters at professional conferences and academic colloquia.

**Foreign Languages**

- Spanish: Professional working proficiency both written and spoken.

RESEARCH  
AND  
WORK  
APPOINTMENTS**SETI Institute / NASA AMES**

*Kepler Science Office Support Scientist*

**Nov 2012 to Present**

- NASA's Kepler Mission is a space-based telescope that monitored ~200,000 stars for four years at 30-minute cadence with unprecedented photometric precision. Its main goal is to discover and characterize Earth-like and other planets to determine their occurrence rate. We work together to comb this very large data set for planetary signals, statistically validate them, and obtain robust estimates of the physical parameters of each planet. We publish the results both in scientific journals as well as write easily-accessible documentation for the publicly-released data.
- My main role has been to lead the team that reviews candidate planetary transit signals. I develop algorithms and software products to support operational decision making in the classification of these planetary signals. Utilizing human and automated vetting techniques, alongside emulation of true and false positives, we statistically validate the Kepler pipeline and create robust planet catalogs sufficient for accurate occurrence rate determinations. As part of the science team, I also help prioritize our research to meet mission deadlines and communicate our progress to management, and work with NASA archives to properly archive and document our results.

## New Mexico State University, Las Cruces, NM

*NSF Graduate Research Fellow*

**May 2009 to Sept 2012**

- I conducted research on extrasolar planets and eclipsing binary stars in collaboration with domestic and international Astronomers. I focused on automated detection methods and robust modeling and statistical inference for the determination of planetary parameters. I worked extensively with data from the Kepler Mission and ground-based telescopes.

*Laboratory Instructor*

**June 2007 to May 2009**

- Taught a laboratory session for a 100-level Astronomy course for undergraduates.

*Research Assistant*

**June 2007 to May 2009**

- Operated and maintained the NMSU robotic 1-meter telescope for the department.

## Apache Point Observatory, Sunspot, NM

*Observing Specialist*

**Dec 2007 to May 2010**

- I operated a 3.5-meter telescope and worked with remote users for nightly data collection.

## Emory University, Atlanta, GA

*Laboratory Instructor*

**Jan 2007 to May 2007**

- Prepared and taught labs for both intro and upper-level Astrophysics courses.

*Astronomy Teaching Assistant*

**Jan 2005 to Jan 2007**

- Tutored students from both scientific and non-scientific backgrounds, such as business.

## LEADERSHIP AND VOLUNTEER POSITIONS

## New Mexico State University, Las Cruces, NM

*President, Astronomy Graduate Student Organization*

**Aug 2010 to July 2011**

- Organized weekly meetings of the graduate students to discuss department-related issues, then met with faculty to address and resolve those issues.

*VP, Astronomy Graduate Student Organization*

**Aug 2008 to July 2009**

- Coordinated over 500 hours of volunteer and outreach service by the Astronomy department.

*2009 Relay for Life Team Coordinator*

**Jan 2009 to April 2009**

- Led the NMSU Astronomy Relay for Life team to raise money for the American Cancer Society.

## Emory University, Atlanta, GA

*President, Outdoor Emory Organization*

**Feb 2006 to Feb 2007**

- Presided over an organization with 400 members that focused

*President, Emory Astronomy Club*

**Feb 2005 to Feb 2007**

- Led club meetings and organized public open houses for Astronomy education.

## SELECT PUBLICATIONS

Planetary Candidates Observed by Kepler. VII. The First Fully Uniform Catalog Based on the Entire 48-month Data Set (Q1-Q17 DR24)

**Coughlin, J.L.**, Mullaly, F. et al. 2016, The Astrophysical Journal Supplement Series, 224, 12

A Population of planetary systems characterized by short-period, Earth-sized planets

Steffen, J.H. and **Coughlin, J.L.** 2016, Proceedings of the National Academy of Sciences, 113, 12023

Planetary Candidates Observed by Kepler. VI. Planet Sample from Q1-Q16 (47 Months)

Mullally, F., **Coughlin, J.L.** et al. 2015, The Astrophysical Journal Supplement Series, 217, 31

Planetary Candidates Observed by Kepler. V. Planet Sample from Q1-Q12 (36 Months)

Rowe, J.R., **Coughlin, J.L.** et al. 2015, *The Astrophysical Journal Supplement Series*, 217, 16

Contamination in the Kepler Field. Identification of 685 KOIs as False Positives via Ephemeris Matching Based on Q1-Q12 Data

**Coughlin, J.L.**, Thompson, S. et al. 2014, *The Astronomical Journal*, 147, 119

Modeling Multi-Wavelength Stellar Astrometry. III. Determination of the Absolute Masses of Exoplanets and Their Host Stars

**Coughlin, J.L.** and López-Morales, M. 2012, *The Astrophysical Journal*, 750, 100

Extrasolar Planets: What can be known before going there

**Coughlin, J.L.** 2013, *Journal of the British Interplanetary Society*, 66, 47

Modeling Multi-Wavelength Stellar Astrometry. III. Determination of the Absolute Masses of Exoplanets and Their Host Stars

**Coughlin, J.L.** and López-Morales, M. 2012, *The Astrophysical Journal*, 750, 100

A Uniform Search for Secondary Eclipses of Hot Jupiters in Kepler Q2 Lightcurves

**Coughlin, J.L.** and López-Morales, M. 2012, *The Astronomical Journal*, 143, 39

Kepler Cycle 1 Observations of Low Mass Stars: New Eclipsing Binaries, Single Star Rotation Rates, and the Nature and Frequency of Starspots

Harrison, T.E., **Coughlin, J.L.** et al. 2012, *The Astronomical Journal*, 143, 4

Low-Mass Eclipsing Binaries in the Initial Kepler Data Release

**Coughlin, J.L.**, López-Morales, M., Harrison, T.E. et al. 2011, *The Astronomical Journal*, 141, 78

Modeling Multi-wavelength Stellar Astrometry. II. Determining Absolute Inclinations, Gravity Darkening Coefficients, and Spot Parameters of Single Stars with SIM Lite

**Coughlin, J.L.**, Harrison, T.E., and Gelino, D. 2010, *The Astrophysical Journal*, 723, 1351

Modeling Multi-wavelength Stellar Astrometry. I. SIM Lite Observations of Interacting Binaries

**Coughlin, J.L.**, Harrison, T.E., Gelino, D., Hoard, D. et al. 2010, *The Astrophysical Journal*, 717, 776

Day-side z'-band Emission and Eccentricity of WASP-12b

López-Morales, M., **Coughlin, J.L.**, Sing, D.K. et al. 2010, *The Astrophysical Journal*, 716, 36

The NMSU 1m Telescope at Apache Point Observatory

Holtzman, J., Harrison, T.E., & **Coughlin, J.L.** 2010, *Advances in Astronomy*, 46

Orbital Solutions and Absolute Elements of the Eclipsing Binary MY Cygni

Tucker, R., Sowell, J., Williamon, R., and **Coughlin, J.L.** 2009, *The Astronomical Journal*, 137, 2949

New Observations and a Possible Detection of Parameter Variations in the Transits of Gliese 436b

**Coughlin, J.L.**, Stringfellow, G., Becker, A., López-Morales, M., Mezzalana, F., and Krajci, T. 2008, *The Astrophysical Journal*, 689L, 149

Long-term Photometric Analysis of the Active W Uma-type System TU Boo

**Coughlin, J.L.**, Dale, H.A., and Williamon, R.M. 2008, *The Astronomical Journal*, 136, 1089

New Beta Lyrae and Algol Candidates from the Northern Sky Variability Survey

Hoffman, D.I., Harrison, T.E., **Coughlin, J.L.**, et al. 2008, *The Astronomical Journal*, 136, 1067

Seven New Low-Mass Eclipsing Binaries

**Coughlin, J.L.** and Shaw, J.S. 2007, *SARA*, 1, 7C

A Spotlight on Starlight

**Coughlin, J.L.** 2007, *Emory Undergraduate Research Journal*