

## Matthew D. Johnson

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### Education

B.A. Astronomy and Physics, Wesleyan University, 2007, *Departmental Honors in Astronomy*

### Research Experience

**Research Fellow** **2005**  
**Keck Northeast Astronomy Consortium** **Williams College**

Worked with Dr. Karen Kwitter on chemical abundances of planetary nebulae. Planned and developed ELSA (Emission Line Spectrum Analyzer), an integrated software package to process data from emission line spectra of planetary nebulae. Refined existing data pipeline and measured line strengths.

**Observing Assistant** **2005–2007**  
**Astronomy Department** **Wesleyan University**

Operated Wesleyan's 24" telescope as part of an ongoing synoptic observing program whose aim was to categorize the periods of T Tauri stars. Learned and used best practices for telescope operation; used telescope control software. Instructed new observers.

**Research Assistant** **2006–2007**  
**Dr. John Salzer** **Wesleyan University**

Worked on several projects relating to chemical abundances of blue compact dwarf galaxies and HII regions. Traveled to Kitt Peak National Observatory to observe several H $\alpha$ -selected galaxies and assisted in data reductions and processing. Adapted ELSA software package for use with extragalactic sources. Obtained abundances for a large sample of blue compact dwarf galaxies and derived a relationship between the abundance and spatial volume density of galaxies.

**Summer Student** **2006**  
**Dr. Jeff Valenti** **Space Telescope Science Institute**

Developed simulations to investigate the feasibility of observing the atmospheres of extrasolar planet with the James Webb Space Telescope. Presented findings at American Astronomical Society Meeting in Seattle.

### Professional Experience

**IT Project Manager** **2007–2008**  
**People For the American Way Foundation** **New York, NY**

Developed web software to support a political organizing fellowship program for college students; integrated open source solutions to fit organization needs.

**Software Development Manager** **2008–2009**  
**The New York Observer** **New York, NY**

Built and maintained web software and server infrastructure to operate the newspaper's site, Observer.com. Made large-scale architecture decisions about which technologies to use and integrate.

**Principal Software Engineer** **2009–present**  
**Slate.com (Washington Post Company)** **New York, NY**

Built and maintained web software to support one of the Internet's highest-trafficked news magazines. Lead a team of other developers and worked with senior staff to develop technology strategy.

## Teaching Experience

Course Assistant, Descriptive Astronomy, Wesleyan University, Spring 2007

## Publications and Working Papers

*Nebular Abundances in Star-Forming Dwarf Galaxies*, honors thesis for the Department of Astronomy, Wesleyan University. Advisor: John Salzer.

With J. Levitt, K. Kwitter, R. Henry: *PNe: An Integrated Semi-Automated Nebular Abundance Package*, Bulletin of the American Astronomical Society #207, 29.15

With J. Levitt, K. Kwitter, R. Henry: *ELSA: An Integrated, Semi-Automated Nebular Abundance Package*, 2006, in *Planetary Nebulae in our Galaxy and Beyond, Proceedings of the International Astronomical Union, Symposium #234*, 439

With J. Valenti: *Simulations of Exoplanet Spectroscopy with JWST*, Bulletin of the American Astronomical Society, #209, 169.09

With J. Levitt, K. Kwitter, R. Henry, P. O'Malley: *ELSA: A semi-automated, nebular abundance package*, in preparation, to be submitted to the *Publications of Astronomical Society of the Pacific*

## Software Developed

**ELSA** (Emission Line Spectrum Analyzer), with K. Kwitter, J. Levitt, P. O'Malley and P. Nunns. See <http://www.williams.edu/Astronomy/research/PN/elsa/>. Processes measured emission line strengths into chemical abundances; provides easy-to-use L<sup>A</sup>T<sub>E</sub>X source output.

Modules submitted to the Drupal open source development community: **Bronto API**, **Comment Login**, **Nodeshare**, **Twistage Integration**, **User Queue**. For links see <http://drupal.org/user/169600>.

## Service

Honor Board, Wesleyan University, 2006–2007 (Chair, 2007)

## Honors and Awards

Littell Prize (top graduating senior in the Astronomy major), Wesleyan University, 2007

Graduated with honors in astronomy, Wesleyan University, 2007

Honorable mention, NSF Graduate Research Fellowship, 2009