Stefano Meschiari

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RESEARCH INTERESTS

- Extra-solar planet detection and dynamical modeling of radial velocity and transit data
- *N*-body and hydrodynamical simulations applied to proto-planetary disk evolution and planetary formation
- Data analysis through high-performance algorithms and citizen science
- Education and outreach through online engagement.

WORK & RESEARCH EXPERIENCE

2012-PRESENT

W. J. McDonald Postdoctoral Fellow

University of Texas at Austin

Conduct research on planet formation in disturbed environments through numerical simulations, lead the development of the *Systemic* software for use in the data analysis pipeline of the Automated Planet Finder telescope and other surveys, collaborate in the discovery of several new exoplanets, develop a new Monte-Carlo code for tracking the evolution of the size distribution of solids in proto-planetary disks, develop online apps and games for astronomy education. Awards: Longhorn Innovation Fund for Technology.

2010-2011

Research Analyst

VN7 Dynamic LP

Led the development of a sophisticated desktop application to monitor the real-time performance of strategies on high-frequency stock trading. The package was used to aggregate statistics, steer strategies, and summarize high-frequency messages by a backend component.

2006-2012

Graduate Research Assistant

University of California at Santa Cruz

Published 6 first-author papers on gravitational instabilities in proto-planetary disks, exoplanet detection through radial velocities and transit timing, and circumbinary planet formation. Awards: Regent's Fellow, Whitford Prize, Award for Excellence in Teaching.

EDUCATION

2012 **Doctor of Philosophy**
ASTRONOMY & ASTROPHYSICS
University of California, Santa Cruz

2006 **Master of Science** (with highest honors)
ASTRONOMY
University of Bologna, Italy

2004 **Bachelor of Science** (with highest honors)
ASTRONOMY
University of Bologna, Italy

PUBLICATIONS 17 REFEREED PAPERS, 8 1ST-AUTHOR, H=12

Meschiari, S., *Circumbinary Planet Formation in the Kepler-16 System. II. A Toy Model for In-situ Planet Formation within a Debris Belt*, 2014, ApJ

Meschiari, S., *Planet Formation in Circumbinary Configurations: Turbulence Inhibits Planetesimal Accretion*, 2012, ApJL

Meschiari, S., *Circumbinary planet formation in the Kepler-16 system. I. N-Body simulations*, 2012, ApJ

Meschiari, S., et al., *The Lick-Carnegie Survey: Four New Exoplanet Candidates*, 2011, ApJ

Meschiari, S. & Laughlin, G., *Systemic: a testbed for characterizing the detection of extrasolar planets. II. Full solutions to the Transit Timing inverse problem*, 2010, ApJ

Meschiari, S., Wolf, A. S., Rivera, E., Laughlin, G., Vogt, S., Butler, P., *Systemic: a testbed for characterizing the detection of extrasolar planets. I. The Systemic Console Package*, 2009, PASP

Meschiari, S. & Laughlin, G., *The Potential Impact of Groove Modes on Type II Planetary Migration*, 2008, ApJL

All publications: http://www.stefanom.org/pubs/

COMPUTING EXPERIENCE

My developer portfolio and open-source projects are available at http://stefano-meschiari.github.io.

- Extensive experience in R, C, Java, Lua, and Matlab programming, with an emphasis on numerical simulations, data analysis and graphical user interface (GUI) design.
- Extensive experience in Web and web app development (see portfolio), including HTML5, CSS/LESS, JavaScript, PHP, Node.js, MySQL & SQLite, and the Backbone, JQuery, Bootstrap, Paper.js and Highcharts libraries.
- Basic knowledge of Python, Fortran, Objective-C, and Clojure.

HONORS AND AWARDS

- 2014, Meschiari, S. (PI), Ludwig, R., Green, J., "Interactive Education Tools in the Public Square" (Award: $2,800)
- 2014, Meschiari, S. (PI), Green, J., Ludwig, R., "Bringing the Tools of Research Direct to the UT Classroom: Systemic, a Virtual Lab for Students" (Award: $87,710)
- 2010, Award for Excellence in Teaching (UCSC)
- 2008, Whitford Prize (UCSC)
- 2006, University of California, Regents' Fellow

OUTREACH

Popular articles and guest blog posts:

- *Telescope apps help amateurs hunt for exoplanets*, The Conversation, UK, republished on Scientific American, Apr. 2014
- *Star Wars planets migrate into position around stellar pairs*, The Conversation, UK, republished on Scientific American, Ars Technica, and The New Statesman, Feb. 2014
- *Growing planets around binary stars*, Guest post on Planet Hunters blog, Nov. 2012

Popular software:

- **Systemic** is an application for exploring and analyzing exoplanetary data. It is used around the world by research groups to analyze radial velocity datasets and derive the orbital properties of putative planetary systems. It is used for undergraduate and graduate classes at Caltech, UF, MIT, SJSU, Yale, Columbia, UCSC, and Delaware (among others).

  http://www.stefanom.org/systemic

- **Super Planet Crash** is an edu-tainment online application, a game that teaches players about gravity and exoplanetary dynamics. It has been played more than 9,000,000 times since its launch in April 2014 thanks to widespread press, viral sharing and accolades for its entertainment value, educational content and game design. It has been featured, among others, on Huffington Post, The Daily Texan, Space.com, Scientific American, The Verge.

  http://www.stefanom.org/spc

Recent talks:

- *Assembling Oddball Worlds: Planet Formation in the Kepler Era*, McDonald Board of Visitors Meeting, February 2014
- *Our Solar System vs. a Thousand Exoplanets: The New Normal*, Westcave Preserve, January 2014

Press releases, media and interviews:

- See http://www.stefanom.org/outreach

RECENT SCIENTIFIC TALKS

- *Apps and Games for Astronomy Education*, .Astronomy 6, December 2014
- *Let It Collide: a Story of Star Wars Planets, Planetesimals, and Super Planet Crashes*, University of Delaware, May 2014
- *Systemic: One Software Package to Rule Them All*, Bay Area Exoplanet Meeting, March 2014
- *Assembling Kepler 16-B*, UT Austin, April 2013
- *Planetary Assembly in Binary Systems*, DPS meeting 2012
- *Two Can't Play That Game: The Perils of Planet Formation*, UT Austin, September 2012

TEACHING

- Excellence in Teaching Award
- Spring 2009, Astronomy 18: Planets and Planetary Systems [Claire Max, UCSC]
- Spring 2007, Astronomy 18: Planets and Planetary Systems [Claire Max, UCSC]
- Winter 2007, Astronomy 4: The Stars [Jean Brodie, UCSC]

PROFESSIONAL SERVICE

- Article for AstroBetter: *Creating Online Apps for Outreach and Education*, July 2014
- Referee for MNRAS, 2012-present
- NASA Origins of Solar Systems Program, external reviewer, 2012, 2013, 2014
- Bash Symposium proceedings, co-editor, 2013
- DPS meeting volunteer, 2012

REFERENCES

Please contact me for a list of references.