

Christopher J. Crockett

CONTACT INFORMATION Lowell Observatory
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RESEARCH INTERESTS Extrasolar planets, young stars, astrobiology, optical and infrared instrumentation

EDUCATION **University of California**, Los Angeles, CA

Ph.D., Astrophysics, August 2011 (expected)

- Thesis Topic: Giant Planet Companions to Young Stars
- Advisor: Dr. Lisa Prato

M.S., Astrophysics, June 2008

- Thesis Topic: Morphological Evolution of Distant Galaxies
- Advisor: Dr. James Larkin

Cornell University, Ithaca, NY

M.Eng., Electrical Engineering, May 2000

- Design Project: Electrical Systems for RoboCup 2000
- Advisor: Dr. Raffaello D'Andrea
- Specialization in Systems Engineering

B.S., Electrical Engineering, May 1999

- Internship with SALIX Technologies, Rockville, MD
- Specialization in Telecommunications and Data Networks

RESEARCH *Predoctoral Fellow*

APPOINTMENTS Lowell Observatory, Flagstaff, AZ **July 2008 - Present**

- Principal investigator for near-infrared radial velocity survey to identify the giant planet population around T Tauri stars.
- P.I. on several observing proposals resulting in over 100 nights of awarded telescope time.
- Created data reduction and spectrum modeling techniques capable of achieving radial velocity precision of 50 m s^{-1} using the CSHELL spectrograph on the IRTF.
- Developed star spot simulations to predict the impact of spots on radial velocity measurements at multiple wavelengths for a variety of star and spot parameters.

Graduate Student Researcher

University of California, Los Angeles, CA **June 2007 - June 2008**

- Developed fully-automated galaxy surface brightness fitting algorithm for bulge-disk decomposition study to investigate the K-band morphological evolution of disk galaxies out to $z \sim 1$ with Keck NGS AO.
- Assisted in the testing of the HAWAII-2RG infrared array detector for both MOS-FIRE and GPI instruments.

Research Assistant

University of Maryland, College Park, MD **Jan 2005 - Aug 2006**

- Member of the science team for NASA's Deep Impact mission to explore comet 9P/Tempel 1.

- Assisted in spacecraft instrument calibration including wavelength resolution, instrument pointing drift, and photometric calibration.
- Tracked comet photometry throughout mission; data used to generate light curves, determine nucleus rotation state, and characterize outbursts.
- Extensive analysis of pre- and post-impact inner coma morphology and visible spectrum of nucleus and coma.
- Developed education and public outreach products including teacher materials, public release photos and movies of impact event.

AWARDED
TELESCOPE
PROPOSALS

McDonald Observatory, 2011A: 7 nights on 2.1-m w/ Sandiford Echelle Spectrograph
 NASA InfraRed Telescope Facility, 2011A: 7 half-nights using CSHELL
 McDonald Observatory, 2010C: 7 nights on 2.1-m w/ Sandiford Echelle Spectrograph
 NASA InfraRed Telescope Facility, 2010B: 7 nights using CSHELL
 McDonald Observatory, 2010A: 8 nights on 2.1-m w/ Sandiford Echelle Spectrograph
 NASA InfraRed Telescope Facility, 2010A: 8 nights using CSHELL
 McDonald Observatory, 2009C: 7 nights on 2.1-m w/ Sandiford Echelle Spectrograph
 NASA InfraRed Telescope Facility, 2009B: 7 half-nights using CSHELL
 McDonald Observatory, 2009A: 8 nights on 2.1-m w/ Sandiford Echelle Spectrograph
 NASA InfraRed Telescope Facility, 2009A: 7 half-nights using CSHELL
 McDonald Observatory, 2008C: 9 nights on 2.1-m w/ Sandiford Echelle Spectrograph
 NASA InfraRed Telescope Facility, 2008B: 7 nights using CSHELL

ADDITIONAL
OBSERVING
EXPERIENCE

Keck Observatory, 2010B: 2 nights using NIRSPEC
 Kitt Peak National Observatory 2010A: 5 nights on 4-m using echelle spectrograph
 Kitt Peak National Observatory 2009A: 8 nights on 4-m using echelle spectrograph

TEACHING AND
PUBLIC
OUTREACH

Astronomer Mentor
 Lowell Observatory Navajo-Hopi Outreach **2008 - present**
 Worked with 5th - 8th grade teachers on the Navajo and Hopi Reservations to develop science education materials for disadvantaged native students. Conducted in-class hands-on lessons, acted as a science liaison for teachers, organized star parties for the community, and coordinated overnight field trips for students to visit the Lowell Observatory.

Planetarium Coordinator
 University of California, Los Angeles, CA **Aug 2007 - June 2008**
 Oversaw planetarium outreach activities including weekly public talks and private shows reaching several thousand attendees a year. Responsibilities included coordi-

nating speakers, designing new presentations, maintaining equipment, and acting as a central point-of-contact for public inquiries.

Museum Guide

Griffith Observatory, Los Angeles, CA **July 2007 - June 2008**
Gave public talks to provide insight into exhibits, handled patron inquiries, and presented night time tours of the sky.

Lab Designer/Instructor

Center for Adaptive Optics Professional Development Program **Oct 2008**
Designed and taught lab activities for an instrumentation course at Maui Community College using inquiry teaching methods to expose native Hawaiian students to digital image storage, transmission, and processing.

Teaching Assistant

University of California, Los Angeles, CA **Aug 2006 - June 2007**
Taught weekly lab sessions for an introductory astronomy course for non-science majors. Lead TA for Winter and Spring Quarters which entailed overseeing a staff of seven TA's and two graders, running weekly TA meetings, and serving as a liaison between professors, TAs, and graders.

Private Tutor

Strathmore Tutoring, Rockville, MD **Sept 2004 - June 2006**
Worked one-on-one with high school students seeking help in algebra, calculus, and physics.

High School Teacher

Montgomery County Public Schools, Rockville, MD **Jan 2003 - June 2004**
Developed and taught daily lessons for high school general science and physics courses for a socio-economically diverse student body. Participated in extensive professional development through the Johns Hopkins Master of Arts in Teaching (MAT) program.

Teaching Assistant

Cornell University, Ithaca, NY **Sept 1999 - May 2000**
Instructor for weekly sophomore and junior level electrical design labs for engineering majors.

PROFESSIONAL
DEVELOPMENT

Stars as Homes for Habitable Planetary Systems
Sagan Exoplanet Summer Workshop, Pasadena, CA **July 26 - 30, 2010**

Twelfth Synthesis Imaging Workshop
NRAO Summer School, Socorro, NM **June 8 - 15, 2010**

Learning from Inquiry in Practice
ISEE PDP Community Interchange Conference, Santa Cruz, CA **Jan 16 - 17, 2010**

Experiencing and Applying Inquiry in Science Learning & Teaching
CfAO Professional Development Workshop, Lahaina, Maui, HI **Mar 13 - 17, 2008**

Re-Thinking Science Learning & Teaching
CfAO Professional Development Workshop, Santa Cruz, CA **Nov 30, 2007**

Improving the College Introductory Astronomy Course Through Active Engagement
NASA Center for Astronomy Education Workshop, Austin, TX **Jan 5 -6, 2007**

HONORS AND AWARDS

Recipient, Chambliss Astronomy Achievement Student Award **Jan 2011**

Recipient, Sigma Xi Grant-in-Aid of Research **Dec 2010**

Honorable Mention, Chambliss Astronomy Achievement Student Award **Jan 2010**

Recipient, Lowell Observatory Predoctoral Fellowship **July 2008**

SERVICE AND OTHER EXPERIENCES

Board of Directors, Business Manager
June 2002 - May 2004, *Montgomery Playhouse*, Gaithersburg, MD

Hardware Engineer
April 2001 - Jan 2003, *Megisto Systems, Inc.*, Germantown, MD

Hardware Engineer
July 2000 - April 2001, *Tellabs*, Germantown, MD

Engineering Intern
Jan 1998 - Aug 1998, *SALIX Technologies, Inc.*, Gaithersburg, MD

REFEREED PUBLICATIONS

Crockett, C. J., Mahmud, N., Prato, L., Johns-Krull, C.M., Jaffe, D.T., Beichman, C.A. "*Precision Radial Velocities with CSHELL*". 2011, ApJ, submitted

Li, J-Y, A'Hearn, M.F., Belton, M. J. S., **Crockett, C. J.**, Farnham, T. L., Lisse, C. M., McFadden, L. A., Meech, K. J., Sunshine, J. M., Thomas, P. C., Veverka, J. "*Deep Impact photometry of Comet 9P/Tempel 1*", 2007, Icarus, 191, 161

Farnham, T. L., Wellnitz, D. D., Hampton, D. L., Li, J.-Y., Sunshine, J. M., Groussin, O., McFadden, L. A., **Crockett, C. J.**, A'Hearn, M. F., Belton, M. J. S., Schultz, P., Lisse, C. M. "*Dust coma morphology in the Deep Impact images of Comet 9P/Tempel 1*", 2007, Icarus, 191, 146

Li, J-Y, A'Hearn, M.F., Belton, M. J. S., **Crockett, C. J.**, Farnham, T. L., Lisse, C. M., McFadden, L. A., Meech, K. J., Sunshine, J. M., Thomas, P. C., Veverka, J. "*Deep Impact photometry of Comet 9P/Tempel 1*", 2006, Icarus, 187, 41

Farnham, T. L., Wellnitz, D. D., Hampton, D. L., Li, J.-Y., Sunshine, J. M., Groussin, O., McFadden, L. A., **Crockett, C. J.**, A'Hearn, M. F., Belton, M. J. S., Schultz, P., Lisse, C. M. "*Dust coma morphology in the Deep Impact images of Comet 9P/Tempel 1*", 2006, Icarus, 187, 26

A'Hearn, M. F., Belton, M. J. S., Delamere, W.A., Kissel, J., Klaasen, K. P., McFadden, L. A., Meech, K. J., Melosh, H. J., Schultz, P. H., Sunshine, J. M., Thomas, P. C., Veverka, J., Yeomans, D. K., Baca, M. W., Busko, I., **Crockett, C. J.**, Collins, S. M., Desnoyer, M., Eberhardy, C. A., Ernst, C. M., Farnham, T. L., Feaga, L., Groussin, O., Hampton, D., Ipatov, S. I., Li, J.-Y., Lindler, D., Lisse, C. M., Mastrodemos, N., Owen, W. M., Richardson, J. E., Wellnitz, D. D., White, R. L. "*Deep Impact: Excavating Comet Tempel 1*", 2005, Science, 310, 258

CONFERENCE
PROCEEDINGS

Crockett, C. J., Mahmud, N., Prato, L., Johns-Krull, C. M., Hartigan, P., Jaffe, D. T., Beichman, C.A. “*Finding the Youngest Planets*”. 2010, in ASP Conf. Ser. XXX, Cool Stars 16, eds. C. Johns-Krull, A. West, M. Browning (San Francisco, CA: ASP)

Morzinski, K. M., **Crockett, C. J.**, Crossfield, I. J. “*Digital Image Exploration at Maui Community College*”. 2010, in ASP Conf. Ser. 436, Learning from Inquiry in Practice, eds. L. Hunter, A. J. Metevier (San Francisco, CA: ASP)

TALKS

“*Searching for the Youngest Planets*”. 2010, U. S. Naval Observatory Colloquium

“*A Search for Young Planetary Systems*”. 2009, Astrobiology Graduate Conference, Seattle, WA

SELECTED
POSTERS

“*Searching For The Youngest Planets With CSHELL*”. 2011, AAS Meeting 217, #253.13

“*Finding the Youngest Planets*”. 2010, Cool Stars 16, Seattle, WA

“*Detection of the Youngest Known Exoplanet*”. 2010, AAS Meeting 215, #421.02

“*Radial Velocity Survey of T Tauri Stars in Taurus-Auriga*”. 2009, AAS Meeting 213, #402.01

“*Morphological Evolution of Distant Galaxies from CATS*”. 2007, AAS Meeting 211, #52.06

REFERENCES

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