

STUART J. ROBBINS  
stuart.robbins@colorado.edu  
*Department of Astrophysics and Planetary Sciences*  
*UCB 391*  
*University of Colorado*  
*Boulder, CO 80309*

**EDUCATION:**

Graduate Education: University of Colorado; Boulder, CO 80309

*Standing:* Fifth-Year graduate student; Ph.D. Candidate; 3.77 G.P.A.  
M.S. in Geophysics, Spring 2008  
*expected Ph.D. Defense - May 2011*

Undergraduate Education: Case Western Reserve University; 10900 Euclid Avenue; Cleveland, Ohio 44106

*Graduated:* Spring 2005, 3.73 G.P.A. *cum laude*  
B.S. in Astronomy, double minors in Geology and Physics

**SELECTED RESEARCH EXPERIENCE:**

CU Boulder - January 2007 through present                      LASP / APS Department

*Advisor:* Brian Hynek, Ph.D. <hynek@lasp.colorado.edu>

*Research Description:* Crater studies on Mars

Exploration of crater properties in Arabia Terra to determine region's history (MS thesis).

Generating a complete catalog of Mars' craters to 1.5 km, though the catalog contains more smaller craters to ensure statistical completeness (main Ph.D. thesis component). Applications once complete include layered ejecta formation scenarios (see below), geologic mapping, Mars surface ages, planet-wide resurfacing rates, and ground-truth comparisons for modeling and automation.

Mars general crater catalog contains in-depth information on layered ejecta craters to test different scenarios for their formation and possibly use them as a proxy for sub-surface volatiles (*e.g.*, water).

Dating of Mars' volcanic calderae using high-resolution data to refine chronology, pyroclastic/effusive volcanism transition, implications for the water and heat budgets of Mars, and the role of secondary craters at the ~50-100 meter scale.

CU Boulder - Summer through December 2006                      LASP / APS Department

*Advisor:* Glen Stewart, Ph.D. <glen.stewart@colorado.edu>

*Research Description:* N-body simulations of Saturn's rings

Simulating the largest range of parameter space to-date of particle internal density, distance from Saturn, particle size range, and geometric optical depth.

Simulated *Cassini* UVIS instrument stellar occultations through the simulation cells were then compared with actual *Cassini* data in order to constrain the physical properties of the rings and provide a new mass estimate (2× larger than previous).

CU Boulder - Spring 2006    Class Project

*Advisor:* Brian Hynek, Ph.D. <hynek@lasp.colorado.edu>

*Research Description:* Statistical analysis and study of layered ejecta craters on Mars.

Wrote programs to analyze MOLA topography data to determine various characteristics of lobed craters and their layered ejecta, and compared with other data sets for physical/chemical trends.

In a proof-of-concept, did ¼ of the planet to show that previous, more limited but "representative" studies were not actually representative and betrayed real trends.

This turned into a funded NESSF project that has become part of my Ph.D. thesis.

CU Boulder - Fall 2005

Class Project

*Advisor:* Robert Pappalardo, Ph.D. <robert.pappalardo@colorado.edu>

*Research Description:* Investigation into possibility of Mercury's smooth plains regions having an impact-related instead of volcanic origin.

Used analytic scaling equations to determine what size crater on Mercury was needed before its melt would exceed the crater volume.

Determined transition range of ~200-700 km for this.

Linked to statistical anomaly where, per surface area, Mercury is lacking in large impact events compared to Earth's Moon.

Paid Projects and Non-Research Work Associated with University of Colorado, Boulder:

*Supervisor:* None

*Employed:* Summer Session 2010

*Job included:* Instructor of Record for ASTR 1110 - Introductory Astronomy, Solar System, Non-Lab, for Non-Majors

*Supervisor:* Brian Hynek, Ph.D. <hynek@lasp.colorado.edu> in the APS Department

*Employed:* Spring Semester 2007

*Job included:* Teaching Assistant for introductory astronomy labs for non-majors - lecture TA

*Supervisor:* John Stocke, Ph.D. <john.stocke@colorado.edu> in the APS Department

*Employed:* Spring Semester 2006

*Job included:* Teaching Assistant for introductory astronomy labs for non-majors - ran two lab sections

*Supervisor:* Douglas Duncan, Ph.D. <dduncan@colorado.edu> in the APS Department

*Employed:* Fall Semester 2005

*Job included:* Teaching Assistant for introductory astronomy labs for non-majors - ran two lab sections

PEER-REVIEWED PUBLICATIONS:

- |         |  |
|---------|--|
| in prep | <b>Robbins, S.J.;</b> Di Achille, G; and B.M. Hynek. (in prep for <i>JGR-Planets</i> ). <i>The Volcanic History of Mars, As Told by Nineteen Major Volcanic Caldera Complexes</i> .  |
| 2010    | <b>Robbins, S.J.;</b> Stewart, G.R.; Lewis, M.C.; Colwell, J.E.; and M. Sremčević. (2010). <i>Estimating the Masses of Saturn's A and B Rings from High-Optical Depth N-Body Simulations and Stellar Occultations</i> . in press. doi: 10.1016/j.icarus.2009.09.012. |
| 2006    | <b>Robbins, S. J.;</b> Henney, C. J.; and J. W. Harvey. (2006). <i>Solar Wind Forecasting with Coronal Holes</i> . <i>Solar Physics</i> , <b>233</b> , No. 2.  |
| 2003    | <b>Robbins, S. J.;</b> Meyer, B. S.; and G. C. Jordan, IV. (2003). <i>Modeling Nucleosynthesis: Web-Based Tools</i> . <i>IAPPP</i> . <b>94</b> , pp. 22-29.  |

CONTRIBUTED ABSTRACTS and CONFERENCE PROCEEDINGS:

- |                           |  |
|---------------------------|--|
| 2010/03 LPSC              | <b>Robbins, S. J.;</b> and B. M. Hynek. <i>Progress Towards a New Global Catalog of Martian Craters and Layered Ejecta Properties, Complete to 1.5 km</i> . <b>41</b> , #2257 (2010).                                    |
| 2010/03 LPSC              | <b>Robbins, S. J.;</b> Di Achille, G.; and B. M. Hynek. <i>Dating the Most Recent Episodes of Volcanic Activity from Mars' Main Volcanic Calderae</i> . <b>41</b> , #2252 (2010).  |
| 2009/09 Mars Crater Conf. | <b>Robbins, S. J.;</b> and B. M. Hynek. <i>Progress Towards a New Global Catalog of Martian Craters and Layered Ejecta Properties, Complete to 1.5 km</i> . 12 <sup>th</sup> Mars Crater Conference, #1207, online only. |

- 2009/03 LPSC **Robbins, S. J.**; and B. M. Hynek. *Towards a New Catalog of Lobed Martian Craters Compared with a New Global Crater Database, Complete to 1.5 km.* **40**, #2460 (2009).
- 2008/10 DPS **Robbins, S. J.**; Stewart, G.R.; Colwell, J.E.; and M.C. Lewis. *Self-Gravity Wakes in Saturnian Rings: Effects of Varying Location, Particle Density and Introducing a Particle Size Distribution.* pp. 424, **40:21.05** (2008).
- 2008/09 Mars Crater Conf. **Robbins, S. J.**; Haber, R.; and B. M. Hynek. *depth/Diameter Ratios of 2.5+ km Craters in Arabia Terra, Mars, and Hints at Refining the Region's History.* 11<sup>th</sup> Mars Crater Conference, #1108, online only.
- 2008/09 Mars Crater Conf. **Robbins, S. J.**; and B. M. Hynek. *MOLA Data May Introduce Significant Artifacts in Crater Diameters.* 11<sup>th</sup> Mars Crater Conference, #1107, online only.
- 2008/03 LPSC **Robbins, S. J.**; and B. M. Hynek. *Testing Formation Theories of NW Arabia Terra, Mars: New Clues from Old Craters.* **39**, #2417 (2008).
- 2007/10 DPS **Robbins, S. J.**; Stewart, G.R.; Colwell, J.E.; and M.C. Lewis. *Simulations of Clumping Effects in High-Optical Depth Rings.* **39:07.05** (2007).
- 2007/10 DPS Stewart, G.R.; **Robbins, S. J.**; and J.E. Colwell. *Evidence for a Primordial Origin of Saturn's Rings* pp. 07.06, **39** (2007).
- 2007/10 Mars Crater Conf. **Robbins, S. J.**; and B. M. Hynek. *A New Automated Method of Determining Depth, Diameter, and Volume of Known Craters.* 10<sup>th</sup> Mars Crater Conference, #1006, online only.
- 2007/10 DPS **Robbins, S. J.**; Stewart, G.; Colwell, J. E.; and M. C. Lewis. *Simulations of Clumping Effects in High-Optical Depth Rings.*
- 2005/09 DPS Schneider, N.M.; **Robbins, S.J.**; Delamere, P.A.; and A.J. Steffl. *Ion Temperature Control of the Io Plasma Torus.*
- 2005/05 AGU/SPD **Robbins, S. J.**; Henney, C. J.; and J. W. Harvey. *Solar Wind Forecasting with SOLIS-VSM.*
- 2005/01 AAS **Robbins, S. J.**; Henney, C. J.; and J. W. Harvey. *Solar Wind Forecasting with Coronal Holes.*
- 2004/01 AAS **Robbins, S. J.**; Meyer, B. S.; and G. C. Jordan, IV. *Modeling Nucleosynthesis: Web-Based Tools.*

#### **GRANTS and FELLOWSHIPS:**

- Sep. 2007 - Aug. '10 Hynek, B.; and **S. J. Robbins.** *Understanding Lobate Craters on Mars: Keys to Subsurface Water.* NASA grant awarded under the 2007 NESSF program in planetary science. I would technically have been the PI but the advisor was required to be under the fellowship terms.

#### **INVITED SPEAKER:**

- August 2007 **Robbins, S. J.** *The Apollo Moon Hoax: Why We Did NOT Not Go to the Moon.* Spoke at the Pre-Party event of the first-ever "Scepticamp."

#### **PROFESSIONAL AFFILIATIONS:**

- 2004 - present Junior Member, American Astronomical Society

### **SELECTED ACTIVITIES & HONORS:**

Fall 2008 - Spring 2011	Webmaster of the APS Department at CU Boulder
Fall 2006 - Spring 2009	Graduate student representative on Course Fees Committee
Fall 2006 - Spring 2009	Graduate student representative on Observatories Committee
Fall 2006 - Spring 2007	Graduate student representative on COSMOS lab sub-committee

### **SELECTED EDUCATIONAL WORK AND PUBLIC OUTREACH:**

Sept. 2008 - present	Write "Exposing PseudoAstronomy" blog that examines popular pseudo-science beliefs relating to astronomy.
July 24, 2010	Gave a 1-hr public lecture entitled, "Exposing PseudoAstronomy: Is the Universe 10,000 Years Old?" at the CU-Boulder's Fiske Planetarium.
May 9, 2010	Gave a 1-hr interactive talk entitled, "Exposing PseudoAstronomy: Examining Young-Earth Creationist Claims" at Denver's third annual "Skepticamp."
2008-'10 School Years	Participating scientist with Project ASTRO-GEO which paired a scientist with a grade school teacher for classroom visits to help connect students with professionals in the field throughout the academic year.
June 13, 2008	Gave a 1-hr public lecture about the Pluto Planetary Status debate at the CU-Boulder's Fiske Planetarium.
April 17-18, 2008	Gave a 1-hr public lecture about the Apollo Moon Hoax at the CU-Boulder's Fiske Planetarium.
July 19-20, 2007	Gave a 1-hr public lecture about the Apollo Moon Hoax at the CU-Boulder's Fiske Planetarium.
April 14, 2007	Gave a public lecture about the Apollo Moon Hoax at the CU-Boulder's Fiske Planetarium for the public as part of the "Yuri's Night" celebration.
April 2006, '07, '08, '09	Ran the 16" and 18" Sommers-Bausch Observatory telescopes as part of the Astronomy Day activities at CU-Boulder.
2006-'07 School Year	Mentored high school student on performing open cluster photometry to derive relative cluster ages as part of the Boulder Valley School District's "Science Research Seminar." Student won 3 <sup>rd</sup> place in the regional science fair in subject.
Fall 2006, '07, '08, '09	Taught an APS-specific Graduate Teacher Program seminar on using the department's CCD camera at the campus observatory.
Fall 2005	Website "Journey Through the Galaxy" listed in <u>Exploring Earth and Space Systems</u> by Kent Franklin (© 2005) as site to help grades 9-12 students pass proficiency in the Minnesota Earth and Space Systems standards
2002 - 2005	Officer, Physics and Astronomy Club, including VP for 2004 - 2005
June 22 & 26, 2004	Assisted with the National Solar Observatory's TLRIBSE program -- a brief internship for grade school teachers to allow them to experience cutting-edge astronomical research
June & July 2004	Assisted with Kitt Peak Nightly Observing Program (KPNO NOP) -- a nightly public outreach program for members of the general public
2003	Made graphic describing creation of color composite images from telescope data still (as of January 2010) in use on the Hubble Heritage website.
2002 - present	Web site "Journey Through the Galaxy" listed on Encyclopædia Britannica with 5-star "Best of the Web" rating
1997 - present	Created, managed, and maintained website "Journey Through the Galaxy" which is an educational astronomy site for the edification of the general public; presently available at < <a href="http://burro.astr.cwru.edu/stu/index.html">http://burro.astr.cwru.edu/stu/index.html</a> >