Jian-Yang Li (李荐扬), Ph.D

Research Scientist
Planetary Science Institute

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Experience

Planetary Exploration Missions: Science team member of Deep Impact, Dawn, Deep Impact eXtended Investigation (DIXI), and Stardust-NExT, participating in science opportunity planning, sequence design and exposure time determination, ground-based observation campaign, and lead photometric analysis of the comet and asteroid targets and the data processing effort.

Photometry of Cometary Nuclei and Asteroids: Photometric modeling to all cometary nuclei closely imaged by spacecraft and several asteroids from high-resolution spacecraft flyby data, as well as Hubble Space Telescope data and ground data.

Albedo and Photometric Mapping: Surface albedo mapping of asteroids and cometary nuclei to study their composition and mineralogy to understand their evolution history and formation scenarios.

Thermal Modeling: Spatially resolved thermal physical modeling on small bodies.

High-Contrast Imaging: High-contrast imaging observations with adaptive optics to search for satellites near asteroids and close companions near stars.

Space-based Interferometry: Studies of the applications of interferometric techniques in planetary sciences, especially for outer solar system objects.

Academic Honors and Awards

NASA Group Achievement Award, Dawn Science Team, 2013, NASA
NASA Group Achievement Award, Dawn Science Operations Team, 2013, NASA
NASA Group Achievement Award, EPOXI Science Team, 2011, NASA
NASA Group Achievement Award, Stardust-NExT Science Team, 2011, NASA
Asteroid 21496 (1998 JQ2) named Lijianyang, 2008, International Astronomical Union
NASA Carl Sagan and Larry Haskin Early Career Fellowship, 2007. Science Mission Directorate, NASA
COSPAR Scientific Assembly 2006 International Travel Grant, 2006. Committee on Space Research
John Wang Academic Excellence Award, 2002. Department of Astronomy, University of Maryland

Education

Ph. D. in Astronomy, University of Maryland College Park, Department of Astronomy, May 2005
M. S. without thesis in Astronomy, University of Maryland College Park, Department of Astronomy, May 2002
B. S. in Physics, University of Science and Technology of China, Department of Physics, June 1999
B. E. in Computer Science double-major, University of Science and Technology of China, Department of Computer Science, June 1999

Positions Held

Research Scientist – Planetary Science Institute, Tucson, AZ 85719. Feb 2012 – present.

Affiliated Assistant Research Scientist – University of Maryland at College Park, Department of Astronomy. Jan 2010 – Jun 2014.

Senior Research Associate – Planetary Science Institute. Supervisor: Mark V. Sykes. Sep 2009 – Dec 2012.

Research Associate – University of Maryland at College Park, Department of Astronomy. Supervisor: Prof. Michael F. A'Hearn, Dr. Lucy A. McFadden. June 2005 – Dec 2009.

Graduate Research Assistant – Supervisor: Dr. Lucy A. McFadden, with Dawn Science Team, University of Maryland at College Park, Department of Astronomy, September 2004 – May 2005. Project title: HST high-resolution mapping of asteroid 1 Ceres.

Graduate Research Assistant – Supervisor: Prof. Michael F. A'Hearn, with Deep Impact Science Team, University of Maryland at College Park, Department of Astronomy, January 2002 – May 2005. Project title: Photometry of small bodies.

Graduate Research Assistant – Supervisor: Prof. Andrew S. Wilson, University of Maryland at College Park, Department of Astronomy, May 2001 – August 2001. Project title: The radio loudness of Seyfert galactic nuclei.

Graduate Research Assistant – Supervisor: Prof. J. Patrick Harrington, University of Maryland at College Park, Department of Astronomy, September 2000 – May 2001. Project title: The angular expansion and distance of the planetary nebula BD+30°3639.

Graduate Research Assistant – Supervisor: Prof. Douglas P. Hamilton, University of Maryland at College Park, Department of Astronomy, May 2000 – September 2000. Project title: Planetary migration simulation during the early stage of the solar system formation.

Graduate Teaching Assistant, University of Maryland at College Park, Department of Astronomy, September 1999-December 2001.

Grants, Subcontracts, and Telescope Times

Total grant as a PI: >$2.3M; all involved grants total: >$7.7M

Principal Investigator, "Smooth Areas on the Nucleus of Comet 67P/Churyumov-Gerasimenko", NASA Early Career Fellowship Program 2014, $100k (2yr).

Principal Investigator, "The First Polarimetric Mapping of Ceres", NOAO Gemini Observatory 2015A semester, 9.5 hrs.

Co-Investigator, "First Optical Polarimetric Imaging of Ceres", ESO VLT 95A, 9.5 hrs.

Principal Investigator, "Probing Subsurface Water Ice Reservoirs on Ceres", NASA Solar System Observations Program, 2013, $636k (5 yr).

Subcontractor, "Study the Photometry and Water Sublimation of Ceres to Support Dawn Mission", UCLA Dawn Mission, 2014, $146k (3 yrs).

Subcontractor, "Contributing to OSIRIS-REx Mission Photometry Working", Ithaca College, 2014, $3k (1yr).

Subcontractor, "Comet ISON Observing Campaign (CIOC)", USRA/LPI, 2014, $15k (1 yr).

Co-Investigator, "Restoring Dawn Framing Camera Multi-Band Data of Vesta to Full Spatial and Photometric Accuracy", PI: Lucille Le Corre (PSI), NASA Planetary Data Analysis Program 2013, $1,060k (4 yr).

Principal Investigator, "Comet Siding Spring at Mars: Using MRO to Interpret HST Imaging of Comets", HST Cycle 22 GO, 2014, $114k (1 yr).

Co-Investigator, "Imaging Polarimetry of the 67P/Churyumov-Gerasimenko with ACS: Supporting the Rosetta Mission", PI: Dean Hines (STScI), HST Cycle 22 GO, 2014, $77k (2 yr).

Co-Investigator, "The Ultraviolet Spectrum of Ceres", PI: Amanda Hendrix (PSI), HST Cycle 22 GO, 2014, $78k (2 yr).

Co-Investigator, "Ground-based characterization of Ceres ahead of Dawn's arrival", PI: Vishnu Reddy (PSI), NASA Planetary Geology and Geophysics Program 2013, $264k (3 yrs).

Principal Investigator, "Imaging Comet C/2013 A1 (Siding Spring) to support risk assessment for Mars orbiters during the close Mars encounter", HST Cycle 21 GO/DD, 2013, $122k (1 yr).

Principal Investigator, "A comparative study of geological features on cometary nuclei using relative photometric techniques", NASA Planetary Mission Data Analysis Program, 2012, $300k (3 yrs).

Principal Investigator, "The first pre-perihelion nucleus size measurement of a sungrazing comet, C/2012 S1 (ISON)", HST Cycle 20 GO/DD, 2013, $73k (1 yr).

Co-Investigator, "Searching for satellites of Ceres: Support for the Dawn Mission", PI: Britney Schmidt (UT-Austin), HST Cycle 21 GO, 2013, $75k (1 yr).

Co-Investigator, "Mineralogical mapping of Asteroid Itokawa using Hayabusa AMICA camera multi-spectral and NIRS spectrometer data", PI: Vishnu Reddy (PSI), NASA Planetary Mission Data Analysis Program 2012, $900k (4 yrs).

Co-Investigator, "Spitzer characterization of coma and nucleus of Comet C/2012 S1 (ISON)", PI: Lisse, C.M. (JHU-APL), Spitzer Cycle 9 DDT, 2013..

Co-Investigator, "Search for H_2O outgassing and near-UV spectral characterization of main belt asteroids (1) Ceres and (24) Themis", PI: McKay, A. (New Mexico State University), Apoch Point Observatory.

Co-Investigator, "Characterizing space weathering on Asteroid (596) Scheila", PI: Kelley, M.S. (University of Maryland at College Park), NASA IRTF 2012b.

Co-Investigator, "Analysis of the coma of comet Hartley 2 and its interaction with the nucleus", PI: Farnham, T.L. (University of Maryland at College Park), NASA Planetary Mission Data Analysis Program, 2011., $575k (3 yr).

Collaborator, "Deep Impact HRI-IR temporal characterization of Hartley 2's surface and coma heterogeneity", PI: Feaga, L.M. (University of Maryland at College Park), NASA Planetary Mission Data Analysis Program, 2011., $548k (3 yrs).

Co-Investigator, "A Swift spectroscopic survey of asteroid families in the UV. PI: Bodewits, D. (University of Maryland at College Park), NASA Swift Guest Investigator, Cycle 8, 2011..

Co-Investigator, "Swift/UVOT observations of the outburst of 596 Scheila". PI: Bodwits, D. (University of Maryland at College Park), NASA Swift Guest Investigator, Cycle 7/DD, 2010.

Co-Investigator, "A Swift spectroscopic survey of asteroids in the UV: Compositional and weathering effects", PI: Bodewits, D. (University of Maryland at College Park), NASA Swift Guest Investigator, Cycle 7, 2010.

Principal Investigator, "Study the photometry of Vesta to support Dawn", NASA Dawn at Vesta Participating Scientist Program, 2010, $255k (3yr).

Principal Investigator, "Improve the measurement of Vesta's pole orientation to support Dawn mission", HST Cycle 17 GO/DD, 2009, $99.4k (2yr).

Co-Investigator, "High-contrast imaging of asteroids: A search for companions and debris in support of NASA's Dawn space mission". PI: Justin Crepp (Caltech), Palomar Observatory 2010a.

Co-Investigator, "High contrast imaging of dusty white dwarfs", HST Cycle 16 GO, 2008, PI: Debes, J.H. (STScI), $124k (3 yr).

Principal Investigator, "Satellite search for Dawn mission targets, Vesta and Ceres", HST Cycle 16 GO/DD, 2008, $120.1k (2yr).

Principal Investigator, "Characterization of the UV absorption feature in asteroid (1) Ceres", HST Cycle 16 GO, 2007, $56k (1 yr)

Co-Investigator, "Photometric Imaging of Asteroid 2 Pallas", HST Cycle 16 GO, 2007, PI: Russell, C. T. (University of California at Los Angeles), $35k (2 yrs)

Science Principal Investigator and Co-Investigator, "Photometric Studies of Cometary Nuclei", NASA Discovery Data Analysis Program 2006. Admin PI: A'Hearn, M. F. (UMD), $293k (3 yrs), with additional 1-year funding for Early Career Fellowship $100k.

Co-Investigator, "Photometric Mapping of Vesta's Southern Hemisphere", PI: McFadden, L. A. (UMD), HST Cycle 15 GO, 2006. $105.2k (2 yrs)+$40.9k suppliment (1 yr)

Co-Investigator, "Gas and Dust Imaging: Filter Photometry of Comet Tempel 1's Coma Pre- and Post-Impact", PI: McFadden, L. A. (UMD), NASA Discovery Data Analysis Program 2006, $361.8k (3 yrs)

Co-Investigator, "Studies of the Near-Nucleus Dust Jets and Coma Morphology in Comets 9P/Tempel 1, 81P/Wild 2 and 19P/Borrelly", PI: Farnham, T. L. (University of Maryland at College Park), NASA Discovery Data Analysis Program 2006, $233.6k (3 yrs)

Collaborator, "Outbursts by comet Tempel 1", PI: A'Hearn, M. F. (University of Maryland at College Park), NASA Discovery Data Analysis Program 2006, $464.6k (3 yrs)

Collaborator, "Analysis of Coordinated Ground-Based Deep Impact Imaging Data", PI: Meech, K. J. (IfA, UH), NASA Discovery Data Analysis Program 2006, $292.9k (3 yrs)

Collaborator, "Extended Spectrum Study of Eros", PI: Izenberg, N. R. (JHU-APL), NASA Discovery Data Analysis Program 2004.

Graduate Researcher, "Spectroscopy and Photometry of Asteroids and Comets Proposal", PI: McFadden, L. A. (University of Maryland at College Park), NASA Discovery Data Analysis Program 2004, $392k (2 yrs)

Invited talks and seminars

1. *Hubble Space Telescope View of Comet C/Siding Spring during its Close Encounter with Mars*. American Geophysical Union 2014 Fall Meeting, December 18, 2014.
2. *The Water Regime of Ceres and its Potential Habitability*, American Geophysical Union 2014 Fall Meeting, December 18, 2014.
3. *The Mysterious Water Regime of Ceres*. Institute of Remote Sensing and GIS, Peking University, Beijing, China, August 15, 2014.
4. *The Mysterious Water Regime of Ceres*. Planetary Science Institute, China University of Geoscience (Wuhan), Wuhan, China, August 14, 2014.

5. *The Mysterious Water Regime of Ceres*. Institute of Space Science, Macau University of Science and Technology, Macau, China, August 11, 2014.
6. *The Mysterious Water Regime of Ceres*. Key Laboratory of Lunar and Deep Space Exploration, National Astronomical Observatory, Chinese Academy of Sciences, Beijing, China, August 7, 2014.
7. *HST Imaging of Comets C/2012 S1 (ISON) and C/2013 A1 (Siding Spring)*. Asia Oceania Geosciences Society (AOGS) 11th Annual Meeting, Sapporo, Japan. July 29, 2014.
8. *Dawn @ Vesta: Full of Surprises*. Institute of Space Science, Macau University of Science and Technology, Macau, China, January 22, 2014.
9. *Dawn @ Vesta: Full of Surprises*. Department of Earth Sciences, Nanjing University, Nanjing, China, January 20, 2014.
10. *Comet ISON: An interesting comet from the beginning to the end*. Purple Mountain Observatory, Nanjing, China, January 17, 2014.
11. *Comet ISON: An interesting comet from the beginning to the end*. Beijing Planetarium, Beijing, China, January 16, 2014.
12. *Dawn @ Vesta: Full of Surprises*. National Astronomical Observatory of China, Beijing, China, January 16, 2014
13. *What do we want to know about the nucleus of Comet ISON?* Comet ISON Observer's Workshop. Aug 1, 2013.
14. *Hubble Observations of Comet C/ISON*. Johns Hopkins University, Applied Physics Laboratory, Laurel, MD. May 22, 2013.
15. *Photometry of Cometary Nuclei and the Implications*. Space Telescope Science Institute, Baltimore, MD. Dec 14, 2012.
16. *Photometry of Cometary Nuclei and the Implications*. Carnegie Institution of Washington, Department of Terrestrial Magnetism, Washington, DC. Nov 30, 2012.
17. *Dawn at Vesta: A Whole New World*. Purple Mountain Observatory, Nanjing, China. May 10, 2012.
18. *Dawn at Vesta: A Whole New World*. Nanjing University, School of Geographic and Oceanographic Sciences, Nanjing, China. May 11, 2012.
19. *Dawn at Vesta: A Whole New World*. University of Science and Technology of China, Hefei, China. May 14, 2012.
20. *Dawn at Vesta: A Whole New World*. Shanghai Astronomical Observatory, Shanghai, China. May 15, 2012.
21. *Vesta Fiesta!* Department of Astronomy Observatory Open House, College Park, MD. Aug 5, 2011.
22. *Colorful Surface of Vesta*. California Institute of Technology, Infrared Processing and Analysis Center (IPAC), Pasadena, CA. Apr 30, 2010.
23. *Colorful Surface of Vesta*. Carnegie Observatory, Pasadena, CA. May 3, 2010.
24. *Mapping the Dwarf World – Ceres and Vesta – Preparing for Dawn Mission*. University of Science and Technology of China, Hefei, Anhui, China. Apr 20, 2009.
25. *Mapping the Dwarf World – Ceres and Vesta – Preparing for Dawn Mission*. Purple Mountain Observatory, Nanjing, China. Apr 13, 2009.
26. *Photometric Variations on Cometary Nuclei -Implications from Comets 19P/Borrelly, 9P/Tempel 1, and 81P/Wild 2*. Jet Propulsion Laboratory, Pasadena, CA. Oct 20, 2008.
27. *Mapping the Dwarf Worlds – Ceres and Vesta*. Department of Terrestrial Magnetism, Carnegie Institution of Washington, Washington, DC. Nov 2, 2007.

28. *Deep Impact*. University of Science and Technology of China, Hefei, Anhui, China., July 25, 2006.
29. *Photometry and surface mapping of asteroid (1) Ceres from HST observations*. 36th COSPAR Scientific Assembly Beijing, China. July 20, 2006.
30. *Photometric Analysis and Mapping for Small Bodies and their Applications on Space Exploration Missions*. National Astronomical Observatory, Chinese Academy of Science, Beijing, China. July 18, 2006.
31. *Deep Impact Photometry of Comet 9P/Tempel 1*. Asia Oceania Geosciences Society (AOGS) 3rd Annual Meeting, Singapore. July 11, 2006.
32. *Deep Impact and an Overview of its Scientific Results*. Naval Research Lab, Washington DC. May 5, 2006.

Community Service

Review Panelist, NASA Planetary Data System, Small Bodies Node, December, March 2014, Mar 2013, April 2012, December and August 2011, September and March 2010, October, 2009

Proposal Review Panelist, NASA Cassini Data Analysis Program, August, 2006, San Diego, CA.

External Reviewer for NASA Programs, Planetary Geology and Geophysics (2010, 2009), Planetary Mission Data Analysis (2008), Cassini Data Analysis (2007, 2013), Origin of Solar System (2013), Outer Planets Research (2014).

External Reviewer for NSF, 2014

Reviewer for Subaru Telescope, 2015

Lecturer, COSPAR Capacity Building Workshop on Planetary Science, Montevideo, Uruguay, July 23 – Aug 3, 2007.

Journal Reviewer for *Icarus*, *Space Science Reviews*, *Planetary and Space Science*, *Publications of the Astronomical Society of Japan*, *Astronomical Journal*, *Research in Astronomy and Astrophysics*, *Astrophysics and Space Science*, *Geophysical Research Letters*, *Astronomy and Astrophysics*

Guest Editor for *Icarus* on Dark and Bright Materials on Vesta.

Scientific Organizing Committee member, Vesta in the Light of Dawn Workshop, Feb 3-4, 2014, Houston, TX.

Media Coverage

探索太阳系的黎明，《科学世界》，April issue, 2015.

登陆彗星，《科学世界》, January issue, 2015.

Could the Dwarf Planet Ceres Support Lift? Space.com, December 22, 2014.

Hubble and Dawn Collaborate to See Ceres, Hubble Google+ Hangout, December 11, 2014.

Strange Comet Behaviour Puzzles Researchers, Nature News, November 13, 2014.

Hubble Space Telescope View of Comet C/2013 A1 (Siding Spring), 46th AAS Division for Planetary Science Conference Press Briefing, November 11, 2014.

Close Encounters: Comet Siding Spring Seen Next to Mars (News Release Number STScI-2014-45), by Space Telescope Science Institute, October 23, 2014.

Hubble Observations of Comet Siding Spring and Mars, Hubble Google+ Hangout, October 23, 2014.

NASA's Hubble Space Telescope Spots Mars-Bound Comet Sprout Multiple Jets, NASA Press Release 14-090, March 27, 2014.

Dawn Mission: Hubble Inspired, Dawn Google+ Hangout, 3:00 pm, December 5, 2013.

Oort Cloud Tosses Astronomers a Cometary Curveball, Science News, October 25, 2013.

Hubble Releases New Comet ISON Observations, Hubble Google+ Hangout, 4:00 pm, October 17, 2013.

The Life and Death of Comet ISON, Discover Magazine cover story, November 2013 issue.

Early Characterization of Comet ISON, 45th AAS Division for Planetary Sciences Conference Press Briefing, 12:00 pm, October 9, 2013.

Dawn Reality-Checks Telescope Studies of Asteroids, NASA Jet Propulsion Laboratory Dawn mission press release, 2013-293, October 2013.

The Hubble Space Telescope and Comet ISON, Hubble Google+ Hangout, 4:00 pm, July 17, 2013.

Fox 5 Morning News, Washington DC, on Comet C/ISON, 9:15 am, 4/30/2013, 5 minutes.

Hubble Captures Comet ISON (News Release Number STScI-2013-14), by Space Telescope Science Institute, April 2013.

Dawn Sees New Surface Features on Giant Asteroid, NASA Jet Propulsion Laboratory press release, March 2012.

Dawn Press Conference at 43th Lunar and Planetary Science Conference, The Woodlands, TX, March 2012.

NASA's SWIFT and Hubble Probe Asteroid Collision Debris (News Release Number STScI-2011-13), by Hubble Space Telescope and Swift, April 2011.

Dawn Captures Video on Approach to Asteroid Vesta, NASA Jet Propulsion Laboratory press release, June 2011.

NASA Mission to Asteroid Gets Help from Hubble Space Telescope (News Release Number STScI-2010-33), joint press release by Space Telescope Science Institute and NASA Jet Propulsion Laboratory, October 2010.

Hubble Images of Asteroids Help Astronomers Prepare for Spacecraft Visit (News Release Number STScI-2007-27), by Space Telescope Science Institute, June 2007.

Mentoring

Shantanu Naidu, Research Assistant, University of Maryland College Park, 2009-2010. Current graduate student at University of California at Los Angeles

Carolyn Crow, Research Assistant, University of Maryland College Park, 2009-2010. Current graduate student at University of California at Los Angeles

Jade Williams, Faculty Research Assistant, University of Maryland at College Park, 2010-2012

Holly Wu, Research Assistant, University of Maryland at College Park, 2011-2012

Karen Xia, Thomas Jefferson High School for Science and Technology, Alexandria, VA, 2013-2014.

Professional Societies

American Astronomical Society – Division of Planetary Sciences (AAS/DPS)

International Astronomical Union – Division F

American Geophysical Union – Planetary Sciences

Computer skills:

Programming languages: Python, C, C++, Fortran

Data processing and plotting: IDL, DS9, Photoshop, IRAF, Matlab, Origin, Excel
All popular operating systems including Macintosh, UNIX, Linux, Windows
Text processing: Latex, Word, PowerPoint, Keynote

Language skills:

Chinese, native proficiency. English, full professional proficiency.