

DR. JOSEPH N. SPITALE

Planetary Science Institute

1700 E. Ft. Lowell Rd. Suite 106; Tucson, AZ 85719-2395

Office: (520) 547-3951 // Cell: (520) 245-9887 // email: jnspitale@psi.edu

Education:

B.S. Physics 1995. California Institute of Technology (Caltech), Pasadena, CA.

Senior Thesis title: *Absolute Calibration and Temperature Retrieval for Data from the Impact of Shoemaker-Levy 9, Fragment K.* Advisor: Glenn S. Orton

PhD Planetary Science 2001. University of Arizona, Tucson, AZ. Advisor: Richard J. Greenberg

Dissertation title: *Detailed Study of the Yarkovsky Effect on Asteroids and Solar System Implications.*

Professional History Since PhD:

Cassini Imaging Science Associate	Aug 2001 – Sept 2011; Oct 2012 -- present
Cassini Participating Scientist	Feb 2013 -- present
PSI Senior Scientist:	Aug 2011 -- present
LPL adjunct faculty: `	Aug 2011 -- present

Other Ongoing Professional Activities:

Volunteer assistance with LPL field class PTYS 594.

Chair of local organizing committee for 2014 Tucson DPS meeting

Member of the AAS Division for Planetary Sciences Executive Committee

Member of the AAS Division for Dynamical Astronomy Executive Committee

Areas of Expertise

Imaging Science, Numerical Methods, Celestial Mechanics, Planetary Rings, Icy Satellites, Planetary Cartography

Current/Recent Research Grants

A New Look at Saturn's Non-Axisymmetric Ringlets and Ring Edges Using Combined Cassini and Historical Data Sets	Selected: 6/7/2011
Planetary Acoustic Mode Seismology Revisited Using Cassini Imaging and Occultation Data Sets	Selected: 3/30/2012
Instantaneous Jet Source Locations on Enceladus: Testing the Tidal Control Hypothesis	Selected: 12/12/2012
Linking Tidal Stresses on Enceladus to Local and Global Eruption Activity Observed by Cassini ISS	Selected: 2/17/2015
Understanding Free Normal Modes and Irregular Structures On The Edges of Saturn's Rings	Submitted: 8/18/2015

Refereed Publications

Spitale, J. N., and Hahn, J. M. (submitted). The Shape of Saturn's Huygens Ringlet Viewed by Cassini ISS. submitted to Icarus. Preprint: <http://arxiv.org/abs/1509.07228>

Hurford, T. A., et al. (submitted). Tidal Disruption of Phobos as the Cause of Surface Features. submitted to JGR.

Spitale, J. N., Hurford, T. A., Rhoden, A. R. (2015). Curtain Eruptions from Enceladus' South-Polar

- Terrain. *Nature* 521, 57--60.
- Hahn, J. M., and **Spitale, J. N.** (2013). An N-body Integrator for Gravitating Planetary Rings, and the Outer Edge of Saturn's B Ring. *ApJ* 772, 122--142.
- Mitchell, C. Porco, C. C., Dones, L., and **Spitale, J. N.** (2013). The Behavior of Spokes in Saturn's Rings. *Icarus* 225, 446--474.
- Hurford, T. A., Helfenstein, P., **Spitale, J. N.**, Porco C. C. (2010). Tidal control of jet eruptions on Enceladus as observed by Cassini ISS between 2005 and 2007. *Icarus* 220, 896--903.
- Spitale, J. N.**, Porco C. C. (2010). Free Unstable Modes and Massive Bodies in Saturn's Outer B Ring. *AJ* 140, 1747--1757.
- Tiscareno, M. S., et al. (2010). Physical Characteristics and Non-Keplerian Orbital Motion of "Propeller" Moons Embedded in Saturn's Rings. *ApJ* 718, L92--L96.
- Cuzzi, J. N., et al. (2010). An Evolving View of Saturn's Dynamic Rings. *Science* 327, 1470.
- Del Genio, A. D., et al. (2010). Saturn Eddy Momentum Fluxes and Convection: First Estimates From Cassini Images. *Icarus* 189, 479--492.
- Spitale, J. N.**, Porco C. C. (2009). Time Variability in the Edge of Saturn's A-Ring Revealed by Cassini Imaging. *AJ* 138, 1520--1528.
- Hahn, J. M., **Spitale, J. N.**, Porco, C. C. (2009). Dynamics of the Sharp Edges of Broad Planetary Rings. *ApJ* 699, 686--710
- Jacobson, R. A., **Spitale, J.**, Porco, C.C., Beurle, K., Cooper, N. J., Evans, M. W., Murray, C. D. (2008). Revised Orbits of Saturn's Small Inner Satellites. *AJ* 135, 261--263.
- Spitale, J.N.** and Porco, C.C. (2007). Association of the Jets of Enceladus with the Warmest Regions on its South-Polar Fractures. *Nature* 449, 695--697.
- Spitale, J. N.**, Jacobson, R. A., Porco, C. C., Owen, W. M. Jr. (2006). The Orbits of Saturn's Small Satellites Derived from Combined Historic and Cassini Imaging Observations. *AJ* 132, 692--710.
- Jacobson, R. A., **Spitale, J.**, Porco, C. C., Owen, W. M., Jr. (2006). The GM Values of Mimas and Tethys and the Libration of Methone. *AJ* 132, 711--713.
- Cooper, N. J., Murray, C. D., Porco, C. C., **Spitale, J. N.** (2006). Cassini ISS astrometric observations of the inner jovian satellites, Amalthea and Thebe. *Icarus* 181, 223--234.
- Charnoz, S., Porco, C., Deau, E., Brahic, A., **Spitale, J.**, Bacques, G., Baillie, K. (2005). Cassini Discovers a Kinematic Spiral Ring Around Saturn. *Science* 310, 1300--1304
- Porco, C. C., et al. (2006). Cassini Observes the Active South Pole of Enceladus. *Science* 311, 1393--1401
- Porco, C. C., et al. (2005). Cassini Imaging Science: Initial Results on Saturn's Atmosphere. *Science* 307, 1243--1247.
- Porco, C. C., et al. (2005). Cassini Imaging Science: Initial Results on Phoebe and Iapetus. *Science* 307, 1237--1242.
- Porco, C. C., et al. (2005). Cassini Imaging Science: Initial Results on Saturn's Rings and Small Satellites. *Science* 307, 1226--1236
- Porco, C. C., et al. (2005). Imaging of Titan from the Cassini Spacecraft. *Nature* 434, 159--168
- Lorenz, R. D., **Spitale, J. N.** (2004). The Yarkovsky Effect as a Heat Engine. *Icarus* 170, 229--233.
- Spitale, J. N.**, Greenberg, R. (2002). Numerical Evaluation of the General Yarkovsky Effect: Effects on Eccentricity, Inclination, and Longitude of Periapse. *Icarus* 156, 211-222.
- Spitale, J. N.** (2002). Asteroid Hazard Mitigation Using the Yarkovsky Effect. *Science* 296, 77.
- Spitale, J. N.**, Greenberg, R. (2001). Numerical Evaluation of the General Yarkovsky Effect: Effects on Semimajor Axis. *Icarus* 149, 222-234.
- Fernández, Yanga R., et al. (1999). The Inner Coma and Nucleus of Comet Hale-Bopp: Results from a Stellar Occultation. *Icarus* 140, 205-220.