

# Parvathy Prem

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## Education

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- Jan 2017  
(anticipated)     **PhD, Aerospace Engineering**, *The University of Texas at Austin (UT Austin), USA.*
- Dissertation title: DSMC Simulations of Volatile Transport in a Transient Lunar Atmosphere and Ice Deposition in Cold Traps after a Comet Impact.
  - Advisors: Dr. David Goldstein and Dr. Philip Varghese, Computational Fluid Physics Lab.
  - Cumulative Grade Point Average: 3.92/4.
- May 2013     **MS, Aerospace Engineering**, *The University of Texas at Austin (UT Austin), USA.*
- Area of Study: Aerothermodynamics and Fluid Mechanics.
  - Graduate-level coursework in planetary science (including field work in planetary geology), scientific computing and geoscience education.
- July 2010     **B. Eng., Aerospace Engineering**, *Nanyang Technological University (NTU), Singapore.*
- First Class Honors; Cumulative Grade Point Average: 4.65/5.
  - Exchange Student at Technische Universiteit Delft, the Netherlands, from Feb-Jul 2009.

## Academic Awards and Honors

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- 2010 – present  
(UT Austin)     Warren A. and Alice L. Meyer Endowed Scholarship in Engineering, 2016.  
M. J. Thompson Endowed Presidential Graduate Scholarship for Aerospace Engineering, 2015.  
Graduate Student Professional Development Award, UT Austin, 2014 and 2015.  
American Geophysical Union Student Travel Grant, 2014.  
George J. Heuer, Jr. Ph.D. Endowed Graduate Fellowship, 2013.  
Third Place, NASA Lunar Science Institute Student Poster Competition, 2011.  
NASA Lunar Science Institute Student Travel Grant, 2011.
- 2006 – 10  
(NTU)     European Aeronautic Defence and Space Company TechMasters Scholarship, 2010.  
NTU President's Research Scholarship, 2007.  
Dean's List, School of Mechanical and Aerospace Engineering, NTU, 2007.  
Singapore Airlines-Neptune Orient Lines Scholarship, 2006–10.
- Others     First Place, Regional Mathematical Olympiad, India, 2005.  
Finalist, Computer Society of India Young Talent Search in Computer Programming, 2005.

## Selected Research and Teaching Experience

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- Aug 2010  
– present     **Graduate Research Assistant**, *The University of Texas at Austin.*
- Investigating the fate of volatiles in an impact-generated lunar atmosphere through Direct Simulation Monte Carlo simulations of atmospheric evolution, including radiative transfer, surface thermal modeling and gas-surface interactions. Supported by NASA's Lunar Advanced Science and Exploration Research program. *Skills:* Parallel programming for supercomputers, visualization of large data-sets, proposal writing. *Programming:* C, MPI, MATLAB, shell script. *Visualization:* Tecplot.
- Jan – May  
2015 & 2016     **Instructor (Compressible Flow)**, *The University of Texas at Austin.*
- Independently taught and managed undergraduate course of 50-70 students for two semesters. *Instructor rating of 4.8/5.0* (in 2015) and *4.9/5.0* (in 2016) in end-semester student survey. Participated in several training workshops, including UT Austin Division of Diversity and Community Engagement's *Inclusive Classrooms Leadership Certificate Seminar*.

Aug – Dec 2014 – 16      **Teaching Assistant (Propulsion & Viscous Flow)**, *The University of Texas at Austin*.  
Assisted with teaching and grading for undergraduate classes of 50-60 students.

## **Selected Service and Leadership Experience**

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Professional      External Reviewer, NASA Exoplanet Research Program, 2015.  
Volunteer, American Geophysical Union Fall Meeting, 2014.  
Organizing Committee, Lunar and Small Bodies Graduate Conference (LunGradCon), 2014.  
Session Chair ('Of the Moon' & 'Missions/Human Exploration'), LunGradCon, 2013 & 2014.

Outreach          Judge, Cockrell School Undergraduate Poster Exhibition, 2015.  
Williams Elementary School Career Fair (discussed careers in science), 2015.  
Science class on 'The Moon's Mysterious Water' for 5<sup>th</sup> Grade at Williams Elementary, 2014.  
Volunteer, Introduce a Girl to Engineering Day & Explore UT, 2012, 2014 & 2016.

## **Peer-Reviewed Publications**

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**Prem, P.**, Goldstein, D.B., Varghese, P.L. and Trafton, L.M., The influence of surface roughness on volatile transport on the Moon, 2016 (submitted to *Icarus*).

**Prem, P.**, Artemieva, N.A., Goldstein, D.B., Varghese, P.L. and Trafton, L.M., Transport of water in a transient impact-generated lunar atmosphere. *Icarus* 255 p. 148–158, 2015. [\[link\]](#)

## **Invited Contributions**

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Goldstein, D.B. and **Prem, P.**, Lunar atmosphere, effects of cometary impacts. Chapter for *Encyclopedia of Lunar Science*, Springer International Publishing Switzerland, 2016 (under review).

**Prem, P.**, Artemieva, N.A., Goldstein, D.B., Varghese, P.L., Trafton, L.M., Transport of water in a transient impact-generated lunar atmosphere. Talk at *57th Brown-Vernadsky Microsymposium (Polar Volatiles on the Moon and Mercury)*, March, 2016. [\[program\]](#) [\[slides\]](#)

## **Conference Presentations**

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**Prem, P.**, Artemieva, N.A., Goldstein, D.B., Varghese, P.L., Trafton, L.M., The influence of surface roughness on volatile transport on the Moon. Talk at *47th DPS Annual Meeting*, November, 2015. [\[abstract\]](#) [\[slides\]](#)

**Prem, P.**, Artemieva, N.A., Goldstein, D.B., Varghese, P.L., Trafton, L.M., The transformation of the lunar exosphere by a comet impact. Poster at *47th AGU Fall Meeting*, December, 2014. [\[abstract\]](#) [\[poster\]](#)

**Prem, P.**, Artemieva, N.A., Goldstein, D.B., Varghese, P.L., Trafton, L.M., Stewart, B.D., Transport of water in a transient impact-generated lunar atmosphere. Talk at *45th LPSC*, March, 2014. [\[abstract\]](#) [\[slides\]](#)

**Prem, P.**, Artemieva, N.A., Stewart, B.D., Goldstein, D.B., Varghese, P.L., Trafton, L.M., Collisional processes and parameters influencing the delivery of volatiles to lunar cold traps after a comet impact. Talk at *NLSI Lunar Volatiles Workshop Without Walls*, May, 2013. [\[abstract\]](#) [\[slides\]](#)

**Prem, P.**, Artemieva, N.A., Pierazzo, E., Stewart, B.D., Goldstein, D.B., Varghese, P.L., Trafton, L.M., Cometary delivery of lunar water: transient atmosphere dynamics and deposition patterns. Talk at *44th DPS Annual Meeting*, October, 2012. [\[abstract\]](#) [\[slides\]](#)

**Prem, P.**, Pierazzo, E., Stewart, B.D., Goldstein, D.B., Varghese, P.L., Trafton, L.M., Cometary delivery of lunar water: a parametric study. Poster at *4th NLSI Lunar Science Forum*, July, 2011. [\[abstract\]](#) [\[poster\]](#)

## **Professional Affiliations**

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Student Member, American Geophysical Union.  
Junior Member, American Astronomical Society (Division for Planetary Sciences).