

Akash Gupta

CONTACT INFORMATION	Department of Earth, Planetary, and Space Sciences University of California, Los Angeles 595 Charles E. Young Drive East Los Angeles, CA 90095-1567	Email: akashgpt@ucla.edu Website: www.akashgpt.com
RESEARCH INTERESTS	Planet formation and evolution; atmospheric escape; radiative hydrodynamics; atmosphere-interior interactions; ab initio molecular dynamics; planetary dynamics and celestial mechanics.	
EDUCATION	University of California, Los Angeles (UCLA) <i>Ph.D. in Planetary Science</i> [†] (expected) 2023 <i>Thesis:</i> Unraveling the evolution of super-Earths and sub-Neptunes <i>Master of Science in Planetary Science</i> [†] 2019 Advisor: Prof. Hilke E. Schlichting Indian Institute of Technology (IIT), Kanpur <i>Bachelor's and Master's (Dual degree) in Aerospace Engineering</i> 2016 <i>Thesis:</i> Dynamics of rings around minor planets Advisors: Prof. Ishan Sharma and Dr. Sharvari Nadkarni-Ghosh	
RESEARCH EXPERIENCE	NASA Future Investigator 2020 - present Graduate Student Researcher 2017 - present Advisor: Prof. Hilke E. Schlichting (2017-) and Prof. Lars Stixrude (2021-) <i>Department of Earth, Planetary, and Space Sciences (EPSS), UCLA</i> Research Assistant 2016-17 Advisor: Prof. Ishan Sharma <i>Mechanics & Applied Mathematics Group, IIT Kanpur</i> Summer Research Student Summer 2015 Advisor: Prof. Heikki Salo <i>Astronomy Research Unit, Department of Physics, University of Oulu</i> Undergraduate Researcher 2013-16 Advisors: Prof. Ishan Sharma & Dr. Sharvari Nadkarni-Ghosh <i>Mechanics & Applied Mathematics Group and Dept. of Aerospace Engr., IIT Kanpur</i>	
SELECT SCHOLASTIC ACHIEVEMENTS	Selected for the OWL Summer Exoplanet Program 2022 at UC Santa Cruz 2022 Travel grant from MIAPbP [‡] to attend <i>Planet Formation Workshop 2022</i> in Germany 2022 <i>Harold and Mayla Sullwold Scholarship</i> by EPSS, UCLA for excellence in research 2020 <i>Future Investigators in NASA Earth and Space Science and Technology (FINESST)</i> grant 2020-23 <i>Constantine and Perina Panunzio Scholarship</i> by EPSS, UCLA for excellence in research 2019 <i>UCLA's University Fellowship</i> for three Quarters 2017-19 <i>EPSS Department Scholarship Award, UCLA</i> 2017 Travel grant for research from IIT to work with Prof. Heikki Salo, U. of Oulu, Finland 2015 Secured 99.61 percentile among ~ 0.5 million candidates in the national exam IIT-JEE [§] 2011	
PUBLICATIONS	Total citations: 312, as of Aug 2022; *: Students mentored 1. Gupta, A. , and Stixrude, L. 2022. In prep. <i>Investigating the solubility of hydrogen in water using ab initio molecular dynamics: implications to exoplanets, Solar system icy giants and planet formation</i> 2. Gupta, A. , *Nicholson, L. and Schlichting, H. E. 2022. In review. <i>MNRAS</i> . arXiv:2205.14020. <i>Properties of the radius valley around low mass stars: Predictions from core-powered mass-loss ...</i>	

[†]formally, *Geophysics & Space Physics*

[‡]Munich Institute for Astro-, Particle and BioPhysics

[§]Indian Institute of Technology - Joint Entrance Examination

3. Owen, J. E., Murray-Clay, R. A., Schreyer, E., Schlichting, H. E., David, A., **Gupta, A.**, Loyd, R. O. P., Shkolnik, E. L., Sing, D. K., Swain, M. R., 2021., In review. arXiv:2111.06094
The fundamentals of Lyman-alpha exoplanet transits
4. Rogers, J. G., **Gupta, A.**, Owen, J. E. and Schlichting, H. E. 2021. *MNRAS*, 508, 5886.
Photoevaporation Vs. core-powered mass-loss: Model comparison with the 3D radius gap
5. **Gupta, A.** and Schlichting, H. E. 2021. *MNRAS*, 504, 4634.
Caught in the act: Core-powered mass-loss predictions for observing atmospheric escape
6. **Gupta, A.** and Schlichting, H. E. 2020. *MNRAS* 493, 792.
Signatures of the core-powered mass-loss mechanism in the exoplanet population: Dependence on stellar properties and observational predictions
7. Estrada, R. Swain, M., **Gupta, A.**, Sotin, C. and Valio, A.. 2020. *ApJ*. 898, 104.
Evolutionary tracks of H/He envelopes of the observed pop. of sub-Neptunes and super-Earths
8. **Gupta, A.** and Schlichting, H.E. 2019. *MNRAS* 487, 24.
Sculpting the valley in the radius distribution of small exoplanets as a by-product of planet formation: The core-powered mass-loss mechanism
9. **Gupta, A.**, Nadkarni-Ghosh, S. and Sharma, I. 2018. *Icarus* 299, 97.
Rings of non-spherical, axisymmetric bodies

SELECT CONFERENCE PROCEEDINGS

1. Tang, H., **Gupta, A.**, Schlichting, H.E. and Young E.D., 2020., 51st Annual Lunar and Planetary Science Conference, 1481
Escape from a Transient Rock Vapor Atmosphere as the Mechanism for Fractionation of the Moon's Moderately Volatile Elements

OBSERVING PROGRAMS	1. Gemini MAROON-X, 25.7 hrs, Co-I (PI: Erik Petigura)	2022
	<i>Probing the Role of Mass Loss in the Formation of Super-Earths and Sub-Neptunes with MAROON-X</i>	
	2. HST Cycle 28, 15 primary spacecraft orbits, Co-I (PI: Paul Cauley)	2020
	<i>Measuring mass loss via metal lines from the very young planet AU Mic b.</i>	
SEMINARS (*:INVITED)	*Astronomy Seminar, Carnegie Earth & Planets Laboratory	2021
	*Disks and Exoplanets Group Seminar, University of Arizona	2020
	*Astronomy Seminar, McMaster University	2020
	*Planetary Lunch Seminar, Massachusetts Institute of Technology	2020
	Planetary Science Seminar, UCLA	2019, '18, '21
CONFERENCES & WORKSHOPS (*:INVITED)	*Planet Formation Workshop by MIAPbP [‡] , Munich, Germany. Talk.	2022
	240 th AAS Meeting, Pasadena, CA, US. Talk.	2022
	Exoplanets IV, Las Vegas, NV, US. Talk.	2022
	Stars and Planets in the Ultraviolet. Talk.	2021
	Exoplanet Demographics. Talk.	2020
	Exoplanets III. Talk.	2020
	Bay Area Exoplanet Meeting. Talk.	2020
	Extreme Solar Systems IV. Reykjavik, Iceland. Poster.	2019
	NASA Sagan Summer Workshop. Pasadena, CA, US. Poster.	2019
	New Horizons in Planetary Systems. Victoria, BC, Canada. Talk.	2019
	Kepler & K2 Science Conference V. Pasadena, CA, US. Poster.	2019
OTHER MAJOR PROJECTS	11 th Annual EPSS Student Research Symposium, UCLA. Los Angeles, CA, US. Poster.	2018
	48 th DPS Meeting and 11 th EPSC. Pasadena, CA, US. Poster.	2016
	Geochemical evolution of planets	2021 - present
	Asymmetry in Lunar 'cold-spot' craters; now led by Sophie Taylor (UCLA)	2017 - present
	Rings around irregularly shaped minor-planets; now led by Shri B. Bharath (IITK)	2016 - present
	Understanding the dynamics of Saturn's F-ring	2015

	Adaptively optimized trajectories for rendezvous with an asteroid	2013-14
TECHNICAL SKILLS	<p><i>Programming languages:</i> FORTRAN, C, MATLAB, Python, IDL, Shell Script.</p> <p><i>Select open-source codes used:</i> VASP, REBOUND, MESA, emcee, dynesty.</p>	
TECHNICAL WORKSHOPS	<p>OWL Exoplanet Summer workshop by UC Santa Cruz and Heising-Simons</p> <p>Planet Formation workshop by MIAPbP in Garching, Germany</p> <p>Sagan Exoplanet Workshop: Astrobiology for Astronomers by NExSci at Caltech</p> <p>Communicating Science Effectively in Today's World by UCLA and EPSS</p> <p>XSEDE HPC Workshop: Summer Boot Camp by XSEDE & PSC at UCLA</p> <p>High Performance Computing Workshop by Intel at IIT Kanpur</p>	<p>2022</p> <p>2022</p> <p>2019</p> <p>2019</p> <p>2018</p> <p>2015</p>
MENTORING, TEACHING, SERVICES AND OUTREACH	<p>MENTORING (RESEARCH):</p> <ul style="list-style-type: none"> - Lorraine Nicholson, (awarded UC LEADS scholarship; NSF GRFP fellow at U. Florida) 2020 - 22 Project: <i>Planet evolution under core-powered mass-loss around ultra-cool M-dwarfs</i> - Sohanjit Ghosh (IITK undergraduate; currently Ph.D. student at U. Maryland) 2017-18 Project: <i>Understanding the dynamics of rings around non-spherical minor planets</i> <p>MENTORING (OTHER):</p> <ul style="list-style-type: none"> - Mentor, <i>EPSS Family Mentorship Program (EFMP)</i>, UCLA 2021 - present - Mentor, <i>Counseling Service</i>, IIT Kanpur 2012-13 <p>TEACHING:</p> <ul style="list-style-type: none"> - Guest Lecturer, Planetary & Orbital Dynamics (EPS SCI 219), UCLA Spring 2019 - Teaching Assistant, Solar System and Planets (EPS SCI 9), UCLA Winter 2019 - Teaching Assistant, Solar System and Planets (EPS SCI 9), UCLA Winter 2018 - Teaching Assistant, Experiments in Aerospace Engineering III (AE451A), IIT Spring 2016 - Teaching Assistant, Experiments in Aerospace Engineering II (AE351A), IIT Kanpur Fall 2015 <p>OTHER DIVERSITY, EQUITY & INCLUSION ACTIVITIES</p> <ul style="list-style-type: none"> - Founder & Organizing Committee Member, <i>EPSS Family Mentorship Program</i> 2021 - present Beginning 2022-23 AY, has an annual budget allocated by the Department Chair and has been awarded ~\$2500 to-date - Department Representative, <i>Mathematics & Physical Sciences Council</i>, UCLA 2017-19 - Departmental Undergraduate Committee, Aerospace Engr., IIT Kanpur 2012-13 <p>OTHER PROFESSIONAL SERVICES AND ACTIVITIES</p> <ul style="list-style-type: none"> - Referee: <i>Nature Astronomy</i>, <i>MNRAS</i>, <i>AAS journals</i> 2020 - present - Member, <i>American Astronomical Society</i> and <i>Division for Planetary Sciences</i> 2022 - present - Founder & Organizer, <i>Planets & Exoplanets Journal Club</i>, UCLA 2020 - 2022 - Global Organizing Committee Member, <i>Exoplanets III</i> conference 2020 - Founded and managed the <i>UCLA Planets & Exoplanets mailing list</i> for promoting inter-departmental communication at UCLA 2019 - 2022 <p>OTHER SELECT OUTREACH ACTIVITIES</p> <ul style="list-style-type: none"> - Invited speaker, <i>Planning for Graduate School</i>, IIT Bombay, India 2021 - Invited speaker, Wildwood Institute for STEM Research and Development Poster Presentation and Lecture Series, Wildwood School, Los Angeles, CA 2019 - Volunteer, International Observe the Moon Night, UCLA 2019 - Participant, <i>Exploring Your Universe</i> - UCLA's Annual Science Outreach Festival 2017-20 - Panelist, Key to Success: Life and Physical Sciences. Grad Student Orientation, UCLA 2018 	
OTHER SELECT MAJOR ACHIEVEMENTS	Member of the first-ever IIT Kanpur team (<i>IITK Motorsports</i>) to conceive, design and fabricate a small, Formula-style racing car to compete at the <i>Formula SAE</i> , Italy'13 org. by SAE International.	
	Society of Automotive Engineers	

‘*Sangeet Bhushan*’ (equiv. to Diploma in Music) in playing Harmonium, an Indian classical instrument, from *Pracheen Kala Kendra*, India; 9-10 years of training in playing the instrument.

‘*Sangeet Bhushan/Visharad II*’ (equiv. to Diploma in Music) in playing Tabla, an Indian classical instrument, from *Pracheen Kala Kendra*, India; 6-7 years of training in playing the instrument.