NAMYA BAIJAL

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EDUCATION

University of Arizona, USA *August 2022- Present*
Ph.D. Candidate, Planetary Sciences; Minor: Geosciences

University of Arizona, USA
Master of Science (MSc Enroute), Planetary Sciences *August 2022- May 2025*
GPA: **3.9**

Imperial College London, UK *Sept 2018 - June 2022*
Integrated Bachelors and Master's of Science (MSci): Geophysics;
Grade: **First Class Honours**

RELEVANT RESEARCH EXPERIENCE

Graduate Student Collaborator, NASA Psyche Mission *August 2022- Present*

Graduate Research Assistant, Advisor: Dr Erik Asphaug *August 2022 -Present*
Lunar and Planetary Laboratory, University of Arizona

- 3D Numerical modeling of basin-scale impacts on asteroid (16) Psyche using Bern SPH
- Quantitative analysis of crater formation, ejecta redistribution, and pre-impact rotation on asteroid (16) Psyche
- Planetesimal collision models in SPHLATCH to simulate the formation of Psyche via giant impacts
- High-pressure-temperature piston-cylinder experiments to assess geochemical evolution of core-mantle boundary materials during planet-forming impacts

Numerical Simulations of the South Pole-Aitken (SPA) Basin *Sept 2021 - June 2022*
MSci Thesis Advisors: Prof. Gareth Collins, Dr Thomas Davison
Dept. of Earth Science and Engineering, Imperial College London

- Performed numerical simulations using iSALE3D hydrocode to model the formation of the SPA basin.
- Modeled the ballistic trajectories of impact ejecta to constrain the fate of the iron impactor, distribution of ejected crust and upper mantle, and the effect of the Moon's thermal state.

Undergraduate Research Assistant, Advisor: Prof. Gareth Collins *July 2020 - Aug 2020*
Dept. of Earth Science and Engineering, Imperial College London

- Simulated complex lunar crater formation in iSALE2D with varying acoustic fluidization parameters.

RELAVANT PUBLICATIONS AND CONFERENCE ABSTRACTS

- **N. Baijal**, E. Asphaug, C. A. Denton, M. Jutzi, S. Raducan, and S. Cambioni (2025). *Collisional Modification of Metal-Rich Asteroids and the Influence of Pre-impact Rotation*. EPSC-DPS2025.
- **N. Baijal**, E. Asphaug, C. A Denton, et al., (2025): *Exploring the interior structure of (16) Psyche through basin-scale collisions*, JGR-Planets (Under revision)

- S. Cambioni, B. P Weiss, E. Asphaug, **N. Baijal** et al., (2025): *Formation of Asteroid (16) Psyche by a Giant Impact,* JGR-Planets (Accepted).
- C. Bierson, S. Courville, et al., **N. Baijal,** (2025): *(16) Psyche's different possible formation scenarios and internal structures: Current constraints and expected mission tests*, JGR-Planets.
- C. Bill, T. Davison, G. Collins, **N. Baijal**, et al., (2024): *Constraining Impact Parameters for the South Pole-Aitken Basin,* 55th LPSC, Woodlands, TX.
- **N. Baijal** et. al., (2024): *Effect of Asteroid Shape on Basin-scale Collisions: Implications for (16) Psyche,* 55th LPSC, Woodlands, TX.
- Z. Purdie, **N. Baijal**, et. al., (2024): *Applying Laboratory Studies to 3D Modelling Results of Thermodynamic Evolution During Planet-forming Collisions,* 55th LPSC,Woodlands, TX.
- **N. Baijal** et. al., (2023): *Porosity and Collisional Seismology of Asteroid Interiors,* 54th LPSC, Woodlands TX.
- T.M. Davison, **N. Baijal**, and G.S Collins (2022): *High-Resolution Oblique Impact Simulations of the Formation of the South Pole-Aitken Basin,* Meteoritics and Planetary Science 57, Scotland UK.

INVITED PRESENTATIONS

- **Psyche Fall Team Meeting, Massachusetts Institute of Technology** *September 2024*
  Major Impact basins on Psyche – Windows to the interior
- **Planetary Lecture Series, Massachusetts Institute of Technology** *October 2023*
  Collisional Modelling of Asteroids: Implications for (16) Psyche and Other Large Asteroids

AWARDS, HONOURS, AND SCHOLARSHIPS

Pierazzo International Student Travel Award *January 2025*
Shirley D. Curson Travel Award *April 2024*
Galileo Circle Scholarship Award *April 2024*
Associateship of the Royal School of Mines *July 2022*
Imperial College Bursary Award *June 2020*

TEACHING AND MENTORING EXPERIENCE

Undergraduate Advisee: Zach Purdie *August 2023-March 2024*
Lunar and Planetary Laboratory, University of Arizona

Mentor for Year 1 Students *Oct 2021 - June 2022*
Dept. of Earth Science and Engineering, Imperial College London
- Prepared lessons on reading scientific papers and tools to succeed in a professional career

Teaching Assistant:
Maths Methods 1, Physical and Surface Processes *Oct 2021 - June 2022*
Dept. of Earth Science and Engineering, Imperial College London

PROFESSIONAL SERVICE

Executive Secretary – NASA ROSES Review Panel *October 2024*
External Reviewer – NASA ROSES Review Panel *October 2024*

OUTREACH AND EXTRACURRICULAR ACHIEVEMENTS

LPL Graduate Student Colloquium Lead-moderator *April 2024- Present*

- Organize graduate student colloquium days during the semester and chair sessions.

The Art of Planetary Science (TAPS) Team Member *April 2024- Present*
Advertising Lead

- Create engaging content to advertise the TAPS show across social media platforms, held at the Lunar and Planetary Laboratory, Tucson each year.

Lunar and Planetary Laboratory Conference (LPLC) Lead *April 2023- Present*

- Organize the annual departmental conference held at the Lunar and Planetary Laboratory including selection of invited speakers.

Outreach Day: Oro Valley Innovation Academy, Tucson, AZ *April 2023*

- Volunteer program to teach 2nd graders about concepts of Astronomy, lunar phases, and the apparent motion of stars and other objects in the night sky

Royal School of Mines Geophysics Society Member *October 2018- October 2022*

TECHNOLOGICAL SKILLS AND LANGUAGES

Specialized Software: iSALE2D, iSALE3D, Bern SPH, SPHLATCH, Seismic Analysis Code (SAC), PuffinPlot, Petrel, SBMT, alphaMELTS.
Programming Languages: Python (Pandas, NumPy, Matplotlib, Seaborn, SciPy, Scikit-Learn), Linux (UNIX), LaTeX.
Mapping/ Map-making Software: ArcGIS, CartoPy, Generic Mapping Tools (GMT), Inkscape, GIMP