

Apurva V. OZA

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Professional

California Institute of Technology

2024-

STAFF SCIENTIST, DIVISION OF GEOLOGICAL AND PLANETARY SCIENCES

- Group supervisors: Prof Yuk L. Yung and Prof Jonathan Lunine

Jet Propulsion Laboratory

2021-2024

POSTDOCTORAL FELLOW

- Advisor: Rosaly Lopes (Planetary Science Directorate)
- Group Supervisors: Mathieu Choukroun (Small Bodies), Renyu Hu (Exoplanets and Astrophysics)

Universität Bern, Bern, Switzerland

2019-

VISITING LECTURER (*Lehrbeauftragter*)

- Co-Instructor: Professor Yann Alibert (Director Center for Space and Habitability)

Physikalisches Institut, University of Bern, Switzerland

2017-2020

POSTDOCTORAL RESEARCHER

- *Planets in Time* Group: Planetary Evolution with Atmospheric Photoevaporation
- Advisor: Christoph Mordasini (Executive Director Division of Space Research and Planetary Sciences)

Education

Université Pierre-et-Marie-Curie, Sorbonne University

2017

PH.D ASTRONOMY & ASTROPHYSICS

- Thesis: Detection and Dynamics of Satellite Exospheres; Advisor: Francois Leblanc, Jean-Jacques Berthelier

University of Virginia

2014

MASTER OF SCIENCE – ASTRONOMY

University of North Carolina at Chapel Hill

2012

B.S. PHYSICS & ASTRONOMY, *summa cum laude*

Université Paul Sabatier (Toulouse III)

2011

L3 PHYSIQUE FONDAMENTALE/M1 ASTROPHYSIQUE

Infrared Surveys & Moving-Object Detection

- Co-discovered the first ALLWISE proper-motion source, WISEA J070720.50+170532.7 ($\mu \approx 1.8''/\text{yr}$), a faint ultra-subdwarf identified in mid-infrared all-sky survey data and validated against 2MASS and USNO-B archival astrometry (Wright et al., incl. **A. V. Oza**, 2014, *AJ*, 147, 61) — direct experience detecting and vetting faint moving objects in a WISE-heritage survey, the precursor workflow to NEO Surveyor moving-object quality assurance.
- Trained in near- and mid-infrared instrumentation and survey science at the University of Virginia under Prof. Michael Skrutskie (2MASS P.I.), including IR detector characterization and survey data reduction.
- Contributed to the LEECH high-contrast infrared imaging survey at the Large Binocular Telescope (P.I. A. Skemer), including infrared characterization of ultra-cool and sub-stellar objects.

Space-Telescope Data Analysis & Validation

- Analyzed JWST MIRI mid-infrared spectra to detect SO₂ and characterize secondary atmospheres and circumstellar debris (Powell et al. 2024, *Nature*; Hu et al. 2024, *Nature*; Flagg et al. 2024, *ApJL*), applying spectral retrieval with rigorous data-quality vetting.
- Extensive experience with large datasets from JWST, HST, WISE, and ground-based facilities, with emphasis on data-product inspection, anomaly identification, and validation prior to scientific interpretation.

Computational Methods & Instrumentation

- Led development of SERPENS, a 3-D Monte Carlo N-body gas-dynamics code with Delaunay-tessellation grid optimization, and co-developed Prometheus for rapid 4-D atmosphere simulations (hydrostatic, hydrodynamic, sputtered, and toroidal regimes). Primary languages: Python (expert), Fortran (working).
- Hands-on cryogenic vacuum testing of spaceflight instrumentation, including fabrication and testing of carbon-nanotube electron guns for flight mass spectrometers.
- Builds automated analysis and quality-assurance pipelines, incorporating machine-learning tools where they demonstrably improve throughput.

List Of Courses Taught

Lecturer | Caltech

Astrobiology - Titan (UNDERGRADUATE/GRADUATE)

2025,2026–

Lecturer | Caltech

Astrobiology - Thermodynamics (UNDERGRADUATE)

2025–

Lecturer | Caltech

Astrobiology - Planetary Atmospheres (UNDERGRADUATE)

2025–

Instructor | University of Bern

Planet Formation and Evolution (GRADUATE)

2018–present

Visiting Lecturer | Indian Institute of Astrophysics

Introduction to Planetary Astrophysics (GRADUATE)

2019

Visiting Lecturer | Raman Research Institute

Planetary Science (UNDERGRADUATE)

2019

Instructor | University of Bern

Physics Laboratory I (SERVICE COURSE)

2018–2020

Instructor | University of Bern

Physics Laboratory II (SERVICE COURSE)

2018–2020

Instructor | University of Virginia

Physics of the Unsolved Mysteries of the Universe (UNDERGRADUATE)

2013–2014

Instructor | National Radio Astronomy Observatory

Educational Research in Radio Astronomy (ERIRA) (UNDERGRADUATE)

2013–2014

Guest Instructor | University of Virginia

Introduction to the Sky and the Solar System (UNDERGRADUATE)

2013–2014

Instructor | University of Virginia

Introduction to Astronomical Observation (UNDERGRADUATE)

2012–2014

Teaching Assistant | University of North Carolina at Chapel Hill

Skynet Astronomy Labs (UNDERGRADUATE)

2011–2012

Teaching Assistant | University of North Carolina at Chapel Hill

Astronomy 101L (UNDERGRADUATE)

2011–2012

Peer-Review Service

Nature

REFeree, SPRINGER-VERLAG

2021–present

The Astrophysical Journal, The Planetary Science Journal, Publications of the Astronomical Society of the Pacific

REFeree, AMERICAN ASTRONOMICAL SOCIETY

2018–present

Geophysical Research Letters

REFeree, AMERICAN GEOPHYSICAL UNION

2018–present

Solar System Workings Program (NASA/ROSES)

REFeree, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

2018–2020

Students

Moritz Meyer zu Westram MASTER'S THESIS, UNIVERSITY OF BERN, SWITZERLAND	(co-advisor)	2022-
Pulkit Gupta UNDERGRADUATE THESIS, INDIAN INSTITUTE OF ASTROPHYSICS (INDORE)	(advised)	2023-2025
Ishita Bhatnagar UNDERGRADUATE THESIS, BITS PILANI, INDIA	(co-advised)	2022-2023
Lukas Affolter MASTER'S THESIS, UNIVERSITY OF BERN, SWITZERLAND	(co-advised)	2020
Andrea Gebek UNDERGRADUATE THESIS, UNIVERSITY OF BERN, SWITZERLAND	(advised)	2017-2018
Bjorn Cotting UNDERGRADUATE THESIS, UNIVERSITY OF BERN, SWITZERLAND	(co-advised)	2018
Athira Unni PHD THESIS, INDIAN INSTITUTE OF ASTROPHYSICS, BANGALORE, INDIA	(mentor)	2019-2023
Raghav Chari UNDERGRADUATE THESIS, UNIVERSITY OF TENNESSEE KNOXVILLE, USA	(advised)	2023-present
Jennifer Park UNDERGRADUATE THESIS, UNIVERSITY OF CALIFORNIA, RIVERSIDE, USA	(co-advisor)	2024-present
Jayshil Patel PHD THESIS, STOCKHOLM UNIVERSITY, SWEDEN	(mentor)	2023 - 2025
Arya Sorate UNDERGRADUATE THESIS, INDIAN INSTITUTE OF TECHNOLOGY, KANPUR, INDIA	(advisor)	2024-present
Cecilia Mancin MASTER'S THESIS, INTERNATIONAL RESEARCH SCHOOL OF PLANETARY SCIENCES, UNIVERSITÀ, D'ANNUNZIO, PESCARA, ITALY	(co-advisor)	2024-present

PUBLICATIONS

41. A. Lanza & **A.V. Oza**, 2026, “Volcanic Satellites as Ion Sources in the Magnetospheres of Ultra-Cool and Brown Dwarf Primaries.” *Astronomy & Astrophysics*, *in review*.
40. C. Mergny, T. Cornet, A. LeGall et al. and A.V. Oza. “The Physical Nature of Regolith on Icy Moons.” *Planetary Science Journal*, *in review*. arXiv:2605.27048
39. **Oza, A.V.**, Johnson R.E., Schmidt C, Calvin, W, and Yung, Y.L. 2026 “Plasma and Thermal Processing Leading to Spatial and Temporal Variability on Europa and Ganymede.” *Astrobiology*, *in press*. 10.1177/15311074261460369
38. E Kleisioti, D Dirkx, **Apurva V Oza** et al. and MA Kenworthy. “Interior-Atmosphere Coupling on TRAPPIST-1 f, g, and h: Cryovolcanic Water Exospheres and Infrared Detectability.” *Astronomy & Astrophysics*, 2026 *in press*. arXiv:2605.26694
37. C. Haslebacher et al. incl. **A.V.Oza** “Active moons in our Solar System and beyond–Io, Europa, Enceladus, Triton, and exomoons.” *Space Science Reviews*, 2026 *in press*. arXiv:2604.12104
36. **Oza, A.V.** et al. “Volcanic Satellites Tidally Venting Na, K, SO₂ in Optical & Infrared Light.” *Monthly Notices of the Royal Astronomical Society*, 2026. 10.1093/mnras/staf1526
35. C. Baskevitch et al. incl **A.V. Oza**. “Modeling Jovian Plasma-Europa Interactions: Innovative Atmosphere and Ionosphere Depiction for JUICE Mission Insights.” *Journal of Geophysical Research: Space Physics*, Volume 130, Issue 11, id.e2025JA033740, 24 pp.

34. Bolmont, E. et al. incl **A.V.Oza** “Survival of satellites during the migration of a Hot Jupiter.” *Astronomy & Astrophysics*, 704, A9. 10.48550/arXiv.2510.10826
33. A.Unni, **A.V.Oza** et al. 2025 “Doppler shifted transient sodium detection by KECK/HIRES.” *Monthly Notices of the Royal Astronomical Society: Letters*, Volume 540, Issue 1, pp. L48-L53, 6 pp.
32. A. Bello-Arufe et al. incl. **A.V.Oza**. 2025 “Evidence for a Volcanic Atmosphere on the Sub-Earth L 98-59 b” *The Astrophysical Journal Letters*, Volume 980, Issue 2, id.L26, 20 pp.
31. **Oza, A.V.** et al. 2024 “Redshifted Sodium Transient near Exoplanet Transit” *Astrophysical Journal Letters*, 973 L53. 10.3847/2041-8213/ad6b29.
30. Unni et al. incl **A.V.Oza**. “Low-resolution transit spectroscopy of three hot Jupiters using the 2 m Himalayan Chandra Telescope”
29. Patel, J. et al. incl **A.V.Oza** “JWST reveals a rapid and strong day side variability of 55 Cancri e.” *Astronomy & Astrophysics*, in press. 10.48550/arXiv.2407.12898.
28. Flagg et al. incl **A.V.Oza**. “Debris Disks Can Contaminate Mid-infrared Exoplanet Spectra: Evidence for a Circumstellar Debris Disk around Exoplanet Host WASP-39.” *The Astrophysical Journal Letters*, Volume 969, Issue 1, id.L19, 7 pp. 2024, 10.3847/2041-8213/ad4649.
27. R. Hu et al. incl **A.V.Oza**. “A Secondary Atmosphere on the Rocky Exoplanet 55 Cnc e.” *Nature*, Volume 630, Issue 8017, p.609-612. 2024, 10.1038/s41586-024-07432-x.
26. D. Powell et al. incl **A.V.Oza**. “Sulphur Dioxide in the Mid-Infrared Transmission Spectrum of WASP-39b.” *Nature*, Volume 626, Issue 8001, p.979-983. 2024, 10.1038/s41586-024-07040-9
25. **Moritz Meyer zu Westram** , and **Apurva V. Oza** , et al. ”Exomoon Phase Curves: Toroidal Exosphere Simulations of Exo-Ios Orbiting 8 Exoplanets in Alkali Spectroscopy.” *Journal of Geophysical Research: Planets*, 129, e2023JE007935. 2024.
24. **Apurva V. Oza** and Robert E. Johnson “Common Origin of Trapped Volatiles in Oxidized Icy Moons and Comets.” *Icarus*, 2024, Volume 411, 115944.
23. E. Meier-Valdés, et al. incl **A.V.Oza**. “Investigating the visible phase curve variability of 55 Cnc e.” *Astronomy & Astrophysics*, 2023, 677, A112.
22. F. Leblanc, L. Roth, J.Y. Chaufray, et al. incl **A.V. Oza**. “Ganymede’s Atmosphere as Constrained by HST/STIS Observations.” 2023, *Icarus*, Volume 399, 115557.
21. Mayank Narang, **Apurva V. Oza**, Kaustubh Hakim, Manoj Puravankara, Ravinder Banyal, and Daniel P Thorngren. “Radio-Loud Exoplanet-Exomoon Survey (RLEES): GMRT Search for Electron Cyclotron Maser Emission.” 2022, *The Astronomical Journal*.
20. Shane Carberry-Mogan, O.J. Tucker, R.E. Johnson, L. Roth, J.Alday, A. Vorburger, P. Wurz, A. Galli, H.T.Smith, B.Marchand, and **Apurva V. Oza**.. ”Callisto’s Atmosphere: First Evidence for H₂ and Constraints on H₂O”, 2022, *Journal of Geophysical Research*, *in press* .
19. Marc Hesse, Jacob S. Jordan, Steven D. Vance, and **Apurva V. Oza** . Downward Oxidant Transport Through Europa’s Ice Shell by Density-Driven Brine Percolation. 2022, *Geophysical Research Letters*, Volume 49, Issue 5, article id. e95416.
18. T. Bertrand, E. Lellouch, B.J. Holler et al. incl. **A.V. Oza** . Volatile Transport Modeling on Triton With New Observational Constraints. 2022, *Icarus*, Volume 373, article id. 114764.
17. N. Jäggi et al. incl. **A.V. Oza** . Evolution of Mercury’s Earliest Atmosphere. 2021, *The Planetary Science Journal*, Volume 2, Issue 6, id.230, 18 pp.
16. S. Charnoz et al. incl. **A.V. Oza** . Tidal pull of the Earth strips the proto-Moon of its volatiles. 2021, *Icarus*, Volume 364, 114451.
15. H. Jens Hoeijmakers et al. incl. **A.V. Oza** . Hot Exoplanet Atmospheres Resolved with Transit Spectroscopy (HEARTS). IV. A spectral inventory of atoms and molecules in the high-resolution transmission spectrum of WASP-121 b. 2020, *Astronomy & Astrophysics*, Volume 641, id.A123, 26 pp
14. Andrea Gebek & **Apurva V. Oza**. Alkaline Exospheres of Exoplanet Systems: Evaporative Transmission Spectra . 2020, *Monthly Notices of the Royal Astronomical Society*, Volume 497, Issue 4, Pages 5271–5291

13. **A.V. Oza**, R.E. Johnson, E. Lellouch, C.Schmidt, N.Schneider, C.Huang, D.Gamborino, A.Gebek, A.Wytenbach, B.-O. Demory, C.Mordasini, P. Saxena, D.Dubois, A.Moullet, and N.Thomas. Sodium and Potassium Signatures of Volcanic Satellites Orbiting Close-in Gas Giant Exoplanets. 2019, The Astrophysical Journal, 885(2), 168.
12. R.E. Johnson, **A.V. Oza**, F.Lebanc, C.Schmidt, T.A. Nordheim, and T.A. Cassidy. The Origin and Fate of O₂ in Europa's Ice: An Atmospheric Perspective. 2019, Space Science Reviews, 215(1), 20.
11. **A.V. Oza**, F. Leblanc, R.E. Johnson, C. Schmidt, L. Leclercq, T.A. Cassidy, and J.Y. Chaufray. Dusk-Over Dawn O₂ Asymmetry in Europa's Near-Surface Atmosphere. 2019, Planetary and Space Science, 167, 23-32.
10. D.J. Bower, D. Kitzmann, A. Wolf et al. and **A.V. Oza** Linking the Evolution of Terrestrial Interiors and an Early Outgassed Atmosphere to Astrophysical Observations. 2019, Astronomy & Astrophysics, Volume 631, A103.
9. J. Stone, A. Skemer, P. Hinz, et al. incl. **A.V. Oza** The LEECH Exoplanet Imaging Survey: Limits on Planet Occurrence Rates Under Conservative Assumptions. 2018, The Astronomical Journal, 156 (6), 286.
8. **A.V. Oza**, R.E. Johnson, and F. Leblanc. Dusk/dawn atmospheric asymmetries on tidally-locked satellites: O₂ at Europa. 2018, Icarus, Volume 305, p.50-55.
7. F. Leblanc, **A.V. Oza**, L. Leclercq, C. Schmidt, T.A. Cassidy, R. Modolo, J.Y. Chaufray, and R.E. Johnson. On the Orbital Variability of Ganymede's Atmosphere. 2017, Icarus 293, 185-198.
6. A.Skemer, C. Morley, N. Zimmerman, et al. incl. **A.V. Oza**. The LEECH Exoplanet Imaging Survey: Characterization of the Coldest Directly Imaged Exoplanet, GJ 504 b, and Evidence for Superstellar Metallicity. 2016, The Astrophysical Journal, Volume 817, Issue 2, article id. 166, 10 pp.
5. R. E. Johnson, **A.V. Oza**, L. A. Young, A. N. Volkov, and C. Schmidt. Volatile Loss and Classification of Kuiper Belt Objects. 2015, The Astrophysical Journal, Volume 809, Issue 1, article id. 43, 9 pp.
4. A.-L Maire, A. Skemer, P.M. Hinz, et al. incl. **A.V.Oza**. The LEECH Exoplanet Imaging Survey. Further constraints on the planet architecture of the HR 8799 system. 2015, Astronomy & Astrophysics, Volume 576, id.A133, 10 pp.
3. Edward L. Wright, J. Davy Kirkpatrick, Christopher R. Gelino, Sergio Fajardo-Acosta, Gregory Mace, Peter R. Eisenhardt, Daniel Stern, Ian S. McLean, M. F. Skrutskie, **Apurva V. Oza**, M. J. Nelson, Michael C. Cushing, I. Neil Reid, Michele Fumagalli, Adam J. Burgasser. The First AllWISE Proper Motion Discovery: WISEA J070720.50+170532.7. 2014, The Astronomical Journal ,Volume 147, Issue 3, article id. 61, 8.
2. P. Petit, F. Lignières, G.A. Wade, M. Aurière, D. Alina, T. Böhm, **A.V. Oza**. Weak magnetic fields of intermediate-mass stars. 2011, Astronomische Nachrichten, Vol.332, Issue 9/10, p.943.
1. P. Petit, F. Lignières, M. Aurière, G.A. Wade, D. Alina, J. Ballot, T. Böhm, L. Jouve, **A.V. Oza**, F. Paletou, S. Théado. Detection of a weak surface magnetic field on Sirius A: are all tepid stars magnetic? 2011, Astronomy & Astrophysics, Volume 532, id.L13.

SELECTED BOOK CHAPTERS, WHITE PAPERS, & MISSION PROPOSALS

16. R. Ogliore et al. incl. **Apurva V. Oza**.. 2025 *in prep* Prometheus (Io Sample Return) Mission Study , NASA/JPL.
15. M. Cameron et al. incl. **Apurva V. Oza**.. ”” 2025 *in prep* Europa Lander Concept, NASA/JPL.
14. C. Phillips et al. incl. **Apurva V. Oza**.. 2025 *in prep* Europa Clipper Reconnaissance, NASA/JPL.

13. T. Sivarani, A. V. Oza, A. Baker, U. Athira, Julia V. Seidel, H. J. Hoeijmakers. "Exoplanet to Exomoon Characterization with 2030s High-Resolution Spectrographs: Na/K, Fe, and O₂ Transmission Spectra Guides." January 5, 2022. *Submitted W.M. Keck Observatory's Call for White Papers*.
12. M. Volwerk, K. Stephan, R. Wagner, and **A.V. Oza**. *Ganymede Through the Ages* (to appear in "Ganymede" Ch. 1.1). Editors: Martin Volwerk, Melissa McGrath, Xianzhe Jia, and Tilman Spohn. Cambridge University Press. <http://doi.org/9781108966474>. (2023) *in press*.
11. A. Galli, A. Vorburger, P. Wurz, M. Galand, **A.V. Oza**, S. Fatemi, C. Plainaki, A. Mura *Interactions Between the Space Environment and Ganymede's Surface* (to appear in "Ganymede" Ch.3.3). Editors: Martin Volwerk, Melissa McGrath, Xianzhe Jia, and Tilman Spohn. Cambridge University Press. <http://doi.org/9781108966474>. (2023) *in press*.
10. L.Roth, C. Plainaki, **A.V. Oza**, A.Vorburger, R.E. Johnson, P.M. Molyneux, K.D. Retherford, F. Leblanc, S. Massetti, A. Mura, P. Wurz. *Ganymede's Tenuous Atmosphere* (to appear in "Ganymede" Ch.3.4). Editors: Martin Volwerk, Melissa McGrath, Xianzhe Jia, and Tilman Spohn. Cambridge University Press. <http://doi.org/9781108966474>. (2023) *in press*.
9. A. Galli et al. incl. **A.V. Oza**. *Plasma-surface interactions at Ganymede*. (Chapter 3.3 in "Ganymede"). Editors: Martin Volwerk, Melissa McGrath, Xianzhe Jia, and Tilman Spohn. Cambridge University Press (expected: 2022)
8. D. Angerhausen, M.Ottiger, F. Dannert et al.; LIFE Collaboration incl. **Apurva V. Oza** . Large Interferometer For Exoplanets (LIFE): VIII. Where is the phosphine? Observing exoplanetary PH₃ with a space based MIR nulling interferometer , *Astrobiology*, *in press*.
7. E. Alei, B.S. Konrad, D. Angerhausen et al.; LIFE Collaboration incl. **Apurva V. Oza** . Large Interferometer For Exoplanets (LIFE): VI. Detecting rocky exoplanets in the habitable zones of Sun-like stars, *Astronomy & Astrophysics*, *in press*.
6. E. Alei, B.S. Konrad, D. Angerhausen et al.; LIFE Collaboration incl. **Apurva V. Oza** . Large Interferometer For Exoplanets (LIFE). V. Diagnostic potential of a mid-infrared space interferometer for studying Earth analogs, *Astronomy & Astrophysics*, Volume 665, A106.
5. J.T. Hansen, M.J. Ireland; LIFE Collaboration incl. **Apurva V. Oza** . Large Interferometer For Exoplanets (LIFE). IV. Ideal kernel-nulling array architectures for a space-based mid-infrared nulling interferometer, *Astronomy & Astrophysics*, Volume 664, A52.
4. B.S. Conrad, E.Aledi, S.P. Quanz, et al. ; LIFE Collaboration incl. **Apurva V. Oza** . Large Interferometer For Exoplanets (LIFE). III. Spectral resolution, wavelength range, and sensitivity requirements based on atmospheric retrieval analyses of an exo-Earth, *Astronomy & Astrophysics*, Volume 664, A23.
3. F.A. Dannert, M.Ottiger, S.P. Quanz, et al.; LIFE Collaboration incl. **Apurva V. Oza** . Large Interferometer For Exoplanets (LIFE). II. Signal simulation, signal extraction, and fundamental exoplanet parameters from single-epoch observations, *Astronomy & Astrophysics*, Volume 664, A22.
2. Sascha Quanz, M.Ottiger, E. Fontanet et al.; LIFE Collaboration incl. **Apurva V. Oza** . Large Interferometer For Exoplanets (LIFE): I. Improved exoplanet detection yield estimates for a large mid-infrared space-interferometer mission 2022, *Astronomy & Astrophysics*, Volume 664, A21.
1. **A.V. Oza**. [Exo]Planetary Evolution (Official Course Book). University of Bern (2018-)

EDITOR

Special Topic: Exomoons and Exorings: The Next Frontier in Exoplanets (~ 10K views):

4. Carl Schmidt, "Doppler-Shifted Alkali D Absorption as Indirect Evidence for Exomoons." *Front. Astron. Space Sci.* doi.org/10.3389/fspas.2022.801873.

3. Phil Sutton, Brayden Albery, and Jake Muff. "A Self-Gravitating Exoring Around J1407b and Implications For *In-Situ* Exomoon Formation." *Front. Astron. Space Sci.* doi.org/10.3389/fspas.2022.819933
2. Danica Adams, "Hydrocarbon Chemistry in the Atmosphere of a Warmer Exo-Titan." *Front. Astron. Space Sci.* doi.org/10.3389/fspas.2022.823227.
1. Sara Seager, Janusz J. Petkowski, Maximilian N. Günther, William Bains, Thomas Mikal-Evans and Drake Deming. "Possibilities for an Aerial Biosphere in Temperate Sub Neptune-Sized Exoplanet Atmospheres," 2021 *Universe*, vol. 7, issue 6, p. 172, doi.org/10.3390/universe7060172.

SESSION CONVENER

LPSC 2022, Houston, TX, USA. "Exoplanets: Inside and Out."

DPS/EPSC 2019, Geneva, Switzerland. "Identification and Characterization of Magma Ocean and Volcanic Worlds."

INVITED COLLOQUIA & SEMINARS

43. University of California Riverside, Astrobiology Colloquium (Invited), October 9, 2026
42. "JUICE Below the Surface: Trapped Molecular Oxygen Bubbles on Europa, Ganymede, and Callisto." European Space Agency, Seminar, May 2026
41. "High energy planetary astrophysics: exomoons and their geological signatures in the magnetospheres of giant planets and dwarf stars." Southwest Research Institute (SwRI), Boulder, CO, USA, Colloquium (Invited), June 8, 2026
40. "Volcanic Exomoons", California Institute of Technology, *Tea Talk*, Nov. 2025
39. "Geologic Activity at Extrasolar Planetary Systems." *University of Paris Cité, Institut Physique de Globe du Paris (IPGP)* Oct. 2025
38. "Sources of Near-Surface Atmosphere & Exosphere of Europa and Ganymede for in-situ detection" Europa Clipper PSG, *Europa Clipper/MASPEX*, University of Oregon, (August 2025)
37. "Geology of Exoplanets." *CAGE Seminar, Institut Physique de Globe du Paris (IPGP)* June 2025
36. "Europa's Water Exosphere Evolution", Ultraviolet Spectrograph Team, *Europa Clipper*, May. 2025
35. "Thermodynamics of Information", Caltech, Astrobiology Ge/Ay 159, Feb. 2025
34. "Saturn's Moon Titan", Caltech, Astrobiology Ge/Ay 159, Jan. 2025
33. "Magma Moon Clouds: Physical Processes and Spectral Detection" (Invited Colloquium), Stanford, Tea Talk, Nov. 2024
32. "Jupiter and Saturn's Gravitational & Thermal Tides: Close-in Europa, Titan, and Exomoons" (Invited Colloquium), NASA/AMES, Nov. 2024
31. "Surface-Atmosphere Interactions on Europa." (Invited Colloquium), Université Paris-Saclay, CNRS, GEOPS, Orsay, France (March 2024).
30. "Europa's Asymmetric Exosphere." (Invited), *Europa Clipper/MASPEX* seminar, SwRI/JPL, USA (Feb 2024).
29. "Europa's Exosphere in and out of Jupiter's shadow." (Invited Colloquium), Planetary Science Division Seminar, California Institute of Technology, Pasadena, CA, USA (Jan 2024).
28. "Exomoon Novae." (Invited Colloquium), Tata Institute for Fundamental Research, TIFR, Mumbai, India (Nov 2023)
27. "Doppler Shift Indication of a Volcanic Exomoon in Sodium Spectroscopy", Jet Propulsion Laboratory, 322 Science Town Hall, Pasadena, CA, USA (Sep 2023).
26. "Visible and Infrared Consequences of Tidal Heating on Volcanic Exoplanets and Exomoons." (Invited Colloquium), Center for Astrophysics, Harvard University, Cambridge, Massachusetts, USA (May 2023).
25. "An Exospheric Ticket to Detect Geologically-active Exomoons and Exoplanets.", JPL Postdoc Seminar, Pasadena, CA, USA (March 2023)
24. "Exo-Io Survey: A Search for Volcanic Exomoons in Evaporative Transmission Spectroscopy." University of Cambridge, Cambridge, UK (Feb 2023)
23. "Setting up an Inverse Problem for Exomoon Retrieval from High-Resolution Alkali Spectroscopy." University of Oxford, Oxford, UK (Feb 2023)
22. "Jupiter's saltwater ocean world Europa: a template for life beyond Earth and alkali-rich exomoons beyond the solar system." PRL/ISRO seminar. Ahmedabad, India (Feb 2023)

21. “Exo-Io Survey: Exo-Io Survey: Multiwavelength Signatures of Gravitationally and Thermally Evaporating Exomoons ” (Invited Colloquium), Indian Institute of Astrophysics, Bengaluru, India (Feb 2023).
20. “Volcanic Exomoons Hidden in Plain Sight ” (Invited Colloquium), Carnegie Observatories, Pasadena, CA, USA (Nov 2022).
19. “Search for Volcanic Exoplanets and Exomoons in Optical/Infrared Evaporative Transmission Spectra ” (Invited Talk), IPAC/Caltech Seminar, Pasadena, CA, USA (Mar 2022).
18. “Evaporative Transmission Spectroscopy at Close-in Exoplanets and Exomoon Systems ” (Invited Talk), Astronomy Tea Talk at Caltech, Pasadena, CA, USA (Feb 2022).
17. “Exo-Io Candidates Orbiting Transiting Hot Jupiters & Saturns” (Invited Talk), JPL/Caltech, Exoplanet Journal Club, Pasadena, CA, USA (Nov. 2021).
16. “[Extrasolar] lunar volatile evolution: Sodium & Oxygen Outgassing” (Invited Talk) JHU/STSCI, Friends of the Lunar Volatiles Seminar (Oct. 2021).
15. “Outgassing [exo]moons and [exo]planets : Volcanism and atmospheric escape benchmarked to Io and Europa” (Invited Talk) JPL/Caltech, Science and Visitor Colloquium Program (Sep. 2021).
14. “Volcanic Tides on Exoplanets & Exomoons: A Geosciences Review of |Na| & |K| as a Trace Volatile Orbiting Sun-like Stars” (Invited Talk) University of Texas at Austin, Seminar Series (April 2021).
13. On the Origin of Evaporating Metals at Exoplanet Systems: Evaporating Exomoons? (Invited Talk) NYU, Space Science Series, Abu Dhabi (Dec. 2020).
12. Rocky Exomoon Signatures Hidden in the Spectra of Close-in Gas Giant Exoplanets. (Invited Talk) Indian Institute of Astrophysics, Seminar, Bangalore, India. (2019)
11. Evaporating Exomoons. (Talk) University of Chicago, Chicago, USA. (June, 2019)
10. Illuminating the Magnetospheres of Close-in Giant Exoplanets: Metallic Signatures of Volcanic Exomoons. (Invited Talk) Raman Research Institute, Bangalore, India. (2019)
9. Na & K at Close-in Exoplanets: Evidence for Geologically-Active Satellites? (Talk) New York University, New York, USA. (Sep 21, 2018)
8. Distinguishing Exogenic and Endogenic Volatiles in Extrasolar Giant Planet Exospheres. (Invited Talk) NASA Goddard, Maryland. (May, 2018)
7. Volcanic Extrasolar Satellite Signatures. (Invited Talk) Observatory of Geneva, Switzerland. (April, 2018)
6. Outgassing Ocean Worlds. (Invited Talk) Indian Space Research Organization (ISRO), PRL, Ahmedabad, India. (Jan. 2018)
5. Rotation-Driven Icy Galilean Satellite Exospheres. (Invited Talk) Center for Space and Habitability. Bern, Switzerland (2017)
4. Les Bosses Atmosphériques. (Invited Talk) LESIA. Meudon, France. (2017)
3. “Carbon Nanotube Ionization Source for Planetary Atmosphere Exploration.” (Talk). Institut d’Astrophysique de Paris. Paris, France. (2015)
2. “Exploration of Planetary Atmospheres : Simulation and Detection.” (Talk). Institut d’Astrophysique de Paris. Paris, France. (2014)
1. ” First Detection of Polarization in the North Polar Spur with the NRAO 40 ft. telescope.” National Radio Astronomy Observatory. Green Bank, WV. (July, 2010)

CONTRIBUTED TALKS & CONFERENCE PROCEEDINGS

71. **Apurva V. Oza**, Robert E. Johnson, Carl Schmidt, and Wendy Calvin “Spatial and Temporal Variability of Surface Oxidants at Europa and Ganymede.” EPSC-DPS Joint Meeting 2025 (EPSC-DPS2025), Helsinki, Finland. id. EPSC-DPS2025-1758 (September, 2025)
70. **Apurva V. Oza**, Yuk Yung, Gabriel Tobie, Danica Adams, Jennifer Park, Ashley Schoenfeld, Steven Vance, Jeehyun Yang, Amirhossein Bagheri, Stuart Bartlett, Michael Malaska; Flavio Petricca, Nivedita Thiagarajan, Rosaly Lopes. “Hydrothermal and Tidal Energy Flux at Titan, Enceladus, and Europa.” EPSC-DPS Joint Meeting 2025 (EPSC-DPS2025), Helsinki, Finland. id. EPSC-DPS2025-1715 (September, 2025)
69. **A.V. Oza** et al. “Sodium Evidence of an Exomoon.” EPSC-DPS Joint Meeting 2025 (EPSC-DPS2025), Helsinki, Finland. id. EPSC-DPS2025-1797 (September, 2025)
68. **Apurva V. Oza** “Spatial and Temporal Variability of O₂ at Europa and Ganymede’s Surfaces” Europa Clipper PSG , University of Oregon, (August 2025)

67. A. Bello-Arufe et al. incl. **A.V.Oza** “A volcanic atmosphere on the sub-Earth L98-59b” AAS, Vol. 57, No. 2 e-id 2025n2i215p04 (January 2025)
66. **A.V.Oza**, Lopes, Rosaly M. C., Nordheim, Tom, Cartwright, Richard J. , Yung, Yuk L. “Outgassing of Ocean World Moons” AGU Fall Meeting 2024, Washington D.C., id. P51E-3022. (December, 2024)
65. J. Morgenthaler, **A.V.Oza**, Schmidt, Carl, Vogt, Marissa, Schneider, Nicholas, Marconi, Max. “Connecting material escape from Io’s atmosphere to Io volcanism” DPS. Vol. 56, id. 111.05 (October, 2024)
64. A.Glauser et al. incl. **A.V.Oza** “The Large Interferometer For Exoplanets (LIFE): a space mission for mid-infrared nulling interferometry.” Proceedings of the SPIE, Volume 13095, id. 130951D 21 pp. (August 2024).
63. M.Meyer zu Westram , **Apurva V. Oza** et al. “Toroidal Exosphere Simulations of Exo-Ios in Alkali Spectroscopy”, Exoplanets 5, Leiden, The Netherlands (June 2024).
62. **Apurva V. Oza** et al. “Doppler Shifted Sodium Booms Indicative of a Rocky Exomoon”, Exoplanets 5, Leiden, The Netherlands (June 2024).
61. Renyu Hu et al. incl **A.V. Oza**. “A CO₂/CO-rich Atmosphere on the Rocky Exoplanet 55 Cnc e.” AASTCS10, Extreme Solar Systems V, New Zealand (April 2024)
60. A. Bello-Arufe, Renyu Hu, **Apurva V. Oza** et al. “Searching for geological activity in a rocky exoplanet around a Sun-like star”, Extreme Solar Systems V, New Zealand (April 2024).
59. **Apurva V. Oza** et al. “Volcanic SO₂ Venting at Hot Saturns by Tidally-Heated Exomoons”, 243rd AAS Meeting (Talk), New Orleans, LA, USA (Jan 2024).
58. **Apurva V. Oza** & François Leblanc “Molecular Oxygen and Water Vapor Evolving Day and Night on Europa”, American Geophysical Union (Poster), San Francisco, CA, USA (Dec 2023).
57. **Apurva V. Oza** & Rosaly M.C. Lopes “Volcanic Sources of Io’s Alkali Clouds”, American Geophysical Union (Poster), San Francisco, CA, USA (Dec 2023).
56. Moritz Meyer zu Westram, **Apurva V. Oza** & A. Galli “Rocky Exomoon Simulations of Toroidal Exospheres Orbiting Gas Giant Exoplanets.”, American Geophysical Union (Poster), San Francisco, CA, USA (Dec 2023).
55. **Apurva V. Oza** “Exomoon Novae”, (Invited Talk), Tata Institute for Fundamental Research (TIFR), Mumbai (Nov. 2023).
54. **Apurva V. Oza** and Steven D. Vance “Habitability of Galilean Moons and Exomoons”, Habitability of Galilean Moons Workshop (Talk), Marseille, France (Oct. 2023).
53. **Apurva V. Oza** and François Leblanc. “Water Ice-Vapor Evolving over Europa and Ganymede’s ~ 85 and 172 hour Orbits”, DPS/EPSC (Talk), San Antonio, TX, USA (Oct 2023).
52. Moritz Meyer zu Westram, **Apurva V. Oza** & A. Galli “Exo-Io Simulations of Toroidal Exospheres .”, European Geophysical Union, General Assembly, EGU-13635, Vienna, Austria, (Mar 2023).
51. **Apurva V. Oza** “Evaporative Transmission Spectra of Rocky Exomoons: dishoom and prometheus”, 241st AAS Meeting (Talk), Seattle, WA, USA (Jan 2023).
50. **Apurva V. Oza** “Volcanic Exomoons Glowing in Alkali and Infrared Light”, Exoplanets in our Backyard II, LPI (Poster), Albuquerque, NM, USA (Nov 2-4 2022).
49. **Apurva V. Oza** “Extrasolar Volcanism as a Source for the Tidally-Evaporating Super-Io Candidate 55 Cancri-e” , 44th COSPAR Scientific Assembly (Talk), Athens, Greece (July 2022).
48. **Apurva V. Oza** and E. Lesage. “Ascent and Escape of Liquid Saltwater on Exo-Europas Orbiting at 1 AU and Beyond ”, 240th AAS Meeting (Talk), Pasadena, CA, USA (June 2022).
47. **Apurva V. Oza** “Transient Sodium and Potassium Clouds at Candidate Exomoon Systems” , Exoplanets IV (Talk), AAS, Las Vegas, NV, USA (May 2022).
46. **Apurva V. Oza** and Sebastien Charnoz. “Volcanic Exorings”, LPSC. (Talk), 53rd Lunar and Planetary Science Congress, LPI Contribution No. 2678, 2022, id.2931. The Woodlands, TX, USA (Mar 2022)
45. **Apurva V. Oza**, Francois Leblanc, Robert E. Johnson, and Rosaly Lopes. “Dusk/Dawn Atmospheric Asymmetries on Tidally-Locked Satellites II: Thermal Tides and Outgassing at the Galilean Satellites, LPSC.” (Poster), 53rd Lunar and Planetary Science Congress, LPI Contribution No. 2678, 2022, id.2862. The Woodlands, TX, USA (Mar 2022)
44. Jäggi, N. et al. incl. **A V. Oza** Early Mercury’s magma ocean atmosphere (Talk) vEGU21, the 23rd EGU General Assembly, id. EGU21-4011 (April 2021).
43. Charnoz, S. et al. incl. **A V. Oza** Tidal Pull of the Earth Strips the Proto-Moon of Its Volatiles 52nd LPSC, LPI Contribution No. 2548, id.1326 (March 2021).

42. Hesse, M. et al. incl. **A V. Oza** Transport of surface oxidants into internal oceans by brine migration through ice shells AASTCS8, Habitable Worlds 2021, id. 1041. BAAS, Vol. 53, No. 3 e-id 2021n3i1041 (Mar 2021).
41. N. Jäggi. et al. incl. **A V. Oza** Mass loss of Mercury's earliest atmosphere during its magma ocean state. 43rd COSPAR Scientific Assembly. Abstract B4.5-0005-21 (oral), id.450. (Jan 2021).
40. **Apurva V. Oza.** and Robert E. Johnson. A common origin of oxygen at Jupiter's icy moons and comets: Modeling thermal outgassing at Europa. (Talk), AAS Division of Planetary Science meeting 52, id. 215.01. Bulletin of the American Astronomical Society, Vol. 52, No. 6. (Oct. 2020)
39. D. Dubois, **Apurva V. Oza.**, and J. Radebaugh. The Sulfur Conundrum on Titan: Cryovolcanism, Outgassing, and Chemical Impact on the Atmosphere. AAS Division of Planetary Science meeting 52, id. 218.04. Bulletin of the American Astronomical Society, Vol. 52, No. 6. (Oct. 2020)
38. Gamborino, D. et al. including **Oza, A.V.**. A Magma Ocean Origin for Mercury's Earliest Exosphere. 14th Europlanet Science Congress 2020, held virtually, id. EPSC2020-571 (Sep. 2020).
37. **Oza, Apurva V.** Observing Above Exoplanets: Sodium Signatures of Volcanically-Active Exomoons. (Invited Talk) Tata Institute for Fundamental Research, TIFR Seminar, Mumbai, India (Sep. 2020).
36. **Oza, A.V.**, Charnoz, S., and Johnson, R.E. Detection of Exomoons or Debris Orbiting Exoplanets. Exoplanets in Our Backyard: Solar System and Exoplanet Synergies on Planetary Formation, Evolution, and Habitability (Feb. 2020)
35. Rubin, M. et al. including **Oza, A.V.** Irradiation of water ice samples in the laboratory: Implications for surface processes on icy moons and comets AGU Fall Meeting Abstracts (Dec. 2019)
34. **Oza, A.V.** & Mordasini, C. Planetary Evolution Driven by Atmospheric Escape: Sub-Neptune to Super-Earth Transition over a Range of Stellar Types (Talk). DPS/EPSC, Geneva (Sep. 2019)
33. **Oza, A.V.** et al. 2019. Extrasolar Volcanic Activity on the Magmatic Super Earth 55 Cancri-e (Poster). DPS/EPSC, Geneva (Sep. 2019)
32. Gebek, A. & **Oza, A.V.**. Nonhydrostatic Density Profiles of Sodium & Potassium at Close-in Gas Giant Exoplanets (Talk) DPS/EPSC, Geneva (Sep. 2019)
31. Leblanc, F. et al. 2019 including **Oza, A.V.**. Modelling of Europa's Plumes (Oral). DPS/EPSC, Geneva (Sep. 2019)
30. Gamborino, D. et al. 2019 including **Oza, A.V.**. Silicate Atmospheres: A study of proto-Mercury (Poster). DPS/EPSC, Geneva (Sep. 2019)
29. Bower, D.J. et al. 2019 including **Oza, A.V.**. Linking the evolution of terrestrial interiors and an early outgassed atmosphere to astrophysical observations (Poster). DPS/EPSC, Geneva (Sep. 2019)
28. Galli, A. et al. 2019 including **Oza, A.V.**. Laboratory analogues for the icy moons of Jupiter – The added value of a time-of-flight mass spectrometer (Poster). DPS/EPSC, Geneva (Sep. 2019)
27. Johnson, R.E. & **Oza, A.V.** Sodium Signatures of Satellites Orbiting Close-in Gas Giant Exoplanets (Solicited Talk). DPS/EPSC, Geneva (Sep. 2019)
26. Bolmont, E., **Oza, A.V.**, et al. 2019. Survival of satellites during the migration of a Hot Jupiter: the influence of tides (Talk). DPS/EPSC, Geneva (Sep. 2019)
25. **Oza, A.V.** et al. 2019. Alkaline Signatures of Active Exomoons (Poster). Extreme Solar Systems IV, Reykjavik, Iceland.
24. **Oza, A.V.** & C. Dorn et al. 2019 . A New Class of Super-Earths (Talk). Extreme Solar Systems IV, Reykjavik, Iceland.
23. **Oza, A.V.** et al. 2018. O₂ Outgassing at Icy Satellites and Comets. (Talk) American Astronomical Society, DPS meeting 50, id.403.03
22. **Oza, A.V.** et al. 2018. Exogenic Volatiles in the Extended Exospheres of Extrasolar Giant Planets. (Talk) European Planetary Science Congress, Berlin, Germany.
21. Galli, A. et al. 2018 including **Oza, A.V.** Simulating the plasma - ice interaction in the lab for Jupiter's icy moons 20th EGU General Assembly, EGU2018, Proceedings from the conference held 4-13 April, 2018 in Vienna, Austria, p.4802
20. **Oza, A.V.** et al. 2017. Atmospheric Bulges on Tidally-Locked Satellites. (Talk) American Astronomical Society, DPS meeting 49, id.203.12
19. **Oza, A.V.** et al. 2017. Europa and Ganymede's Water-Product Exospheres. (Poster) European Planetary Science Congress 2017, held 17-22 September, 2017 in Riga Latvia, id. EPSC2017-626
18. **Oza, A.V.** et al. 2017. Rotation-Driven Icy Galilean Satellite Exospheres. (Talk) Ices in the Solar System. ESA-AC. Madrid, Spain.

17. **Oza, A.V** et al. 2016. Directly Detecting Molecular Oxygen Exospheres at Europa and Ganymede. (Poster). Canary Islands Winter School of Astrophysics
16. **Oza, A.V** et al. 2016. Origin and Evolution of Europa's Oxygen Exosphere. (Talk). AAS/Division for Planetary Sciences Meeting Abstracts, Vol. 48, 517.05.
15. **Oza, A.V** et al. 2016. On the Direct Detection of Water Exospheres at Europa and Ganymede. (Poster). CNES Toulouse, France. 2016
14. Leblanc, F., **Oza, A.V** et al. 2016. 3D Multispecies Collisional Model of Ganymede's Atmosphere. (Poster). AAS/Division for Planetary Sciences Meeting Abstracts, Vol. 48, 429.09.
13. **Oza, A.V.** et al. 2016 "Development of a Carbon Nanotube Ionizer for Exosphere Exploration." (Poster). Programme Nationale Soleil-Terre. Hendaye, France.
12. **Oza, A.V.** et al. 2016 Capturing Atmospheres via Nanotechnology and 3D Exosphere Simulations. (Talk). ESEP: Space Instrumentation for planetary exploration. Observatoire de Paris, Meudon, France.
11. **Oza, A.V. et al. 2015** Towards a Carbon Nanotube Ionization Source for Planetary Atmosphere Exploration. (Poster). AGU Fall Meeting. San Francisco, California
10. Schmidt, C. et al. 2015 including **Oza, A.V.** Plasma Parameters in Io's Torus II: Measurements from Apache Point Observatory. European Planetary Science Congress 2015. Nantes, France.
9. Troup, N. et al. 2015 including **Oza, A.V.** A Study of Statistical Binaries with SDSS/APOGEE. American Astronomical Society, AAS Meeting 225, id.340.06.
8. Johnson, R.E., **Oza, A.V** et al. 2014. Volatile Loss and Classification of Kuiper Belt Objects. American Astronomical Society, DPS meeting 46, id.510.01.
7. Skemer, A. et al. 2014 incl. **A.V.Oza** High contrast imaging at the LBT: the LEECH exoplanet imaging survey. Proceedings of the SPIE, Volume 9148, id. 91480L 12 pp. (2014). (SPIE Homepage)
6. Turner, J. et al. 2014 incl. **A.V.Oza** Plasma Parameters in Io's Torus I: Measurements from Apache Point Observatory. American Geophysical Union, Fall Meeting 2014, abstract P13E-07.
5. Skemer, A. et al. incl. **Oza, A.V.** LEECH: A 100 Night Exoplanet Imaging Survey at the LBT " Exploring the Formation and Evolution of Planetary Systems, " *Proceedings of the International Astronomical Union*, IAU Symposium, Volume 299, pp. 70-71, January 2014.
4. **Oza, A.V.**, Reichart, D., Trotter, A. Probing the Circumburst Environment & Jet of GRB 091018A : Modeling the Synchrotron Peak - Cooling Break Cross Over. *American Astronomical Society* meeting. Austin, TX, January 8-12, 2012.
3. **Oza, A.V.** & Reichart, D. *Afterglow Photometry and Modeling GRB 091018*. American Physical Society, 78th Annual Meeting of the Southeastern Section of the APS; October 19-22, 2011; Roanoke, VA.
2. **Oza, A.** *Exploring the Relationships of Optical Blazar and Quasar Variability Through a Range of Redshifts*. Annual Meeting of the Southeastern Section of the APS, December 2007.
1. Co-author on 55 Gamma-Ray Burst Coordination Network (GCN) Circulars. 2009-2013