

Apurva V. OZA

GRADUATE STUDENT · PLANETARY ATMOSPHERES.

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Education

Sorbonne Universités VI: Pierre and Marie Curie University

Paris, FRANCE

PH.D CANDIDATE ASTRONOMY & ASTROPHYSICS

expected June 2017

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

University of Virginia Department of Astronomy

Charlottesville, Virginia

MASTER OF SCIENCE – ASTRONOMY

Sep 2012, May 2014

- Project: Atmospheric Evolution Modeling and Echelle Search for Tidally Heated Exomoons.
- Advisor: Robert E. Johnson

University of North Carolina at Chapel Hill

Chapel Hill, North Carolina

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

August 2008- May 2012

- Thesis: Modeling the Afterglow of GRB 091018A: Spectral Evolution and Evidence for a Progenitor-Driven Superwind.
- Advisor: Daniel E. Reichart

University of Toulouse III

Toulouse, France

L3, PHYSIQUE FONDAMENTALE ET M1 ASTROPHYSIQUE: (1-YR EXCHANGE STUDENT.)

Sep. 2010 - June 2011

North Carolina School of Science and Mathematics

Durham, North Carolina

Aug. 2006- May 2008

Recent Research Experience

Laboratory for Atmospheres, Mediums, and Space Observations

Paris, France

EXOSPHERE MODELING

Collab: BOB JOHNSON (U. VIRGINIA)

Sep. 2014 - present

- Monte Carlo modeling of Europa's exosphere.
- Analytic model for satellite exospheres under rotation. Investigation of orbital asymmetries and physical processes.
- Exosphere-UV Aurorae comparisons: detailed analysis of surface-atmosphere interactions on icy Galilean Satellites.

LATMOS - Guyancourt

Guyancourt, FRANCE

SPACE INSTRUMENTATION

Collab: N.T. HONG (CHT, VIETNAM)

Sep. 2014 - present

- Cold cathode testing for *in-situ* mass spectrometry and alleviation of cube-satellite space charge.
- Development and characterization of a Carbon Nanotube Electron Gun .
- Electric field simulations of field electron emission using [SIMION](#) ion simulator.

UVA Planetary Atmospheres Group

Charlottesville, Virginia, USA

ATMOSPHERIC EVOLUTION MODELING

ADVISOR: ROBERT E. JOHNSON

Sep. 2013 - Sep. 2014

- Developed atmospheric escape model for collisional and collisionless exospheres (application: Kuiper Belt Objects).
- Echelle spectrometer search for signatures of tidally-heated extrasolar moons.

Infrared Instrumentation Lab

Charlottesville, Virginia, USA

INFRARED INSTRUMENTATION & OBSERVATIONS OF EXOPLANETS

ADVISOR: MICHAEL F. SKRUTSKIE

Sep. 2012 - Sep. 2013

- Adaptive Optics Observations at the Large Binocular Telescope (LBT) for [LEECH](#) survey.
- Designed [LMIRcam](#) slit-mask for LBT observations of HR8799 planetary system.
- Echelle spectrograph observations of Io-plasma torus at Apache Point Observatory.
- Developed preliminary thermal model for infrared spectrograph [HPF Planet Finder](#).

TEACHING

- 2012-2014 **Instructor & Grader: Introductory Astronomy Courses**, 320 Hours *UVA*
- 2013-2014 **Developed new course: Astr 1221 Skynet Virginia**, with Dr. Edward Murphy *UVA*
- 2013-2014 **Developed new course: Astr 1270R: Physics of the Unsolved Mysteries of the Universe**, with Dr. Kelsey Johnson *UVA*
- 2013, 2014 **Instructor: Educational Research in Radio Astronomy (ERIRA)**, Lead Polarization Project *Green Bank, WV, USA*
- 2012 **Guest Lecturer: Astr 1210, 1270**, Intro Astronomy & Unsolved Mysteries of the Universe *UVA*
- 2011-2012 **Teaching Assistant**, [Skynet Astronomy Labs](#) *UNC*

Honors & Awards

- 2016 **2nd place presentation**, [National Solar & Terrestrial Conference \(PNST\)](#) *Hendaye, France*
- 2013, 2014 **Hearst Fellowship in the Biological and Physical Sciences**, \$6000 *Virginia, USA*
- 2012 **Robert Shelton Award for Outstanding Research**, UNC Department of Physics & Astronomy *North Carolina, USA*
- 2009-2012 **NASA Space Grant Research Fellowship**, \$12,500 *North Carolina, USA*
- 2007 **Best Undergraduate Poster**, American Physical Society *Tennessee, USA*

Education Public Outreach & Initiatives

- 2016 - **Founder: CafeAstroParisien**, Monthly Astronomy Discussions *Paris, France*
- 2011-2014 **Telescope Operator & Educator: Public Nights.**, [McCormick](#) & [Morehead](#) Observatories. *UVA & UNC*
- 2011-2012 **Morehead Planetarium Educator**, [Carolina Skies](#) Full Dome Theater Lectures *North Carolina, USA*
- 2012-2014 **Planetarium Educator**, [EPO Initiative: Dark Skies Bright Kids](#). *Virginia USA*
- 2008-2012 **Staff Writer**, [Carolina Scientific](#) *UNC*
- 2007 **Mathematics Instructor**, [EPO Initiative: Akanksha](#) *Maharashtra, India*

8. **A.V. Oza**, R.E. Johnson, and F. Leblanc *Rotation-Driven Satellite Exospheres* Astrophysical Journal Letters *in-prep*, May 2017.
7. **A.V. Oza**, F. Leblanc, R.E. Johnson, C. Schmidt, L. Leclercq, T.A. Cassidy, J.Y. Chaufray. [Dusk Over Dawn Molecular Oxygen Asymmetry at Europa's Exosphere](#). Icarus submitted, Jan. 2017.
6. F. Leblanc, **A.V. Oza**, L. Leclercq, C. Schmidt, T.A. Cassidy, R. Modolo, J.Y. Chaufray, R.E. Johnson. [On the Orbital Variability of Ganymede's Atmosphere](#). Icarus *in press*, 2017.
5. Skemer et al. 2016 including **A.V. Oza**. [The LEECH Exoplanet Imaging Survey: Characterization of the Coldest Directly Imaged Exoplanet, GJ 504 b, and Evidence for Superstellar Metallicity](#). The Astrophysical Journal, Volume 817, Issue 2, article id. 166, 10 pp.
4. R. E. Johnson, ; **Oza, A.V**; L. A. Young,; A. N. Volkov, ; C. Schmidt, [Volatile Loss and Classification of Kuiper Belt Objects](#). The Astrophysical Journal, Volume 809, Issue 1, article id. 43, 9 pp. .
3. A.-L Maire et al. 2015 including **A.V.Oza**. [The LEECH Exoplanet Imaging Survey. Further constraints on the planet architecture of the HR 8799 system](#) .Astronomy Astrophysics Volume 576, id.A133, 10 pp.
2. 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 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](#).The Astronomical Journal, 2014 Volume 147, Issue 3, article id. 61, 8 .
1. P. Petit, F. Lignières, M. Aurière, G.A. Wade, D. Alina, J. Ballot, T. Böhm, L. Jouve, **A. Oza**, F. Paletou, S. Théado. [Detection of a weak surface magnetic field on Sirius A: are all tepid stars magnetic?](#) Astronomy & Astrophysics, 2011 Volume 532, id.L13..

CONFERENCE PROCEEDINGS & SELECTED PRESENTATIONS

21. **Oza, A.V.** et al. 2017. [Rotation-Driven Icy Galilean Satellite Exospheres](#). (Talk) Ices in the Solar System. ESA-AC. Madrid, Spain.
20. **Oza, A.V** et al. 2016 [Directly Detecting Molecular Oxygen Exospheres at Europa and Ganymede](#). (Poster). Canary Islands Winter School of Astrophysics
19. **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.
18. **Oza, A.V** et al. 2016 [On the Direct Detection of Water Exospheres at Europa and Ganymede](#). (Poster). CNES Toulouse, France. 2016
17. 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.
16. **Oza, A.V.** et al. 2016 "Development of a Carbon Nanotube Ionizer for Exosphere Exploration." (Poster). Programme Nationale Soleil-Terre. Hendaye, France.
15. **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.

14. **Oza, A.V. et al. 2015** [Towards a Carbon Nanotube Ionization Source for Planetary Atmosphere Exploration](#). (Poster). AGU Fall Meeting. San Francisco, California
13. **Oza, A.V. et al. 2015** "Carbon Nanotube Ionization Source for Planetary Atmosphere Exploration." (Talk). Institut d'Astrophysique de Paris. Paris, France.
12. Schmidt, C. et al. 2015 including **A.V.Oza** [Plasma Parameters in Io's Torus II: Measurements from Apache Point Observatory](#). European Planetary Science Congress 2015. Nantes, France.
11. Troup, N. et al. 2015 including **A.V.Oza** [A Study of Statistical Binaries with SDSS/APOGEE](#). American Astronomical Society, AAS Meeting 225, id.340.06.
10. **Oza, A.V. et al. 2014** "Exploration of Planetary Atmospheres : Simulation and Detection." (Talk). Institut d'Astrophysique de Paris. Paris, France.
9. 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.
8. Skemer, A. et al. 2014 including **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)
7. Turner, J. et al. 2014 including **A.V.Oza** [Plasma Parameters in Io's Torus I: Measurements from Apache Point Observatory](#). American Geophysical Union, Fall Meeting 2014, abstract P13E-07.
6. [LEECH: A 100 Night Exoplanet Imaging Survey at the LBT](#)
Andrew Skemer, and 31 co-authors, including **A.Oza**. "Exploring the Formation and Evolution of Planetary Systems," *Proceedings of the International Astronomical Union*, IAU Symposium, Volume 299, pp. 70-71, January 2014.
5. [Probing the Circumburst Environment & Jet of GRB 091018A : Modeling the Synchrotron Peak - Cooling Break Cross Over](#). **Oza, A**, Reichart D, Trotter, A. *American Astronomical Society* meeting. Austin, TX, January 8-12, 2012.
4. [Weak magnetic fields of intermediate-mass stars](#)
P. Petit, F. Lignières, G.A. Wade, M. Aurière, D. Alina, T. Böhm, **A. Oza**.
Astronomische Nachrichten, Vol.332, Issue 9/10, p.943, December 2011.
3. **Oza, A.** *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 et al.** *First Detection of Polarization in the North Polar Spur with the NRAO 40 ft. telescope*. Educational Research in Radio Astronomy, July 2010, Green Bank, WV.
1. **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.

POPULAR SCIENCE ARTICLES & CIRCULARS

4. Co-author on 55 Gamma-Ray Burst Coordination Network (GCN) Circulars. 2009-2013
3. Oza, A.V. "A Magnetizing Find." *Carolina Scientific* 4.1 (2011): 4-5.
2. Oza, A.V. "An Astronomical Kingdom." *Carolina Scientific* 3.2 (2011): 13-14.
1. Oza, A.V. "A Superbubble Bath." *Carolina Scientific* 2.1 (2009): 32-33.