

Tejaswi Venumadhav Nerella

Curriculum Vitae

Member, School of Natural Sciences
1 Einstein Drive
Institute for Advanced Study
Princeton, NJ 08540

Contact:
Phone: (626) 826-3571
email: tejaswi@ias.edu

Education

California Institute of technology Ph.D. in Physics, <i>Advisor:</i> Christopher Hirata	2010-2015
Indian Institute of Technology, Kanpur M.Sc (Integrated) in Physics	2005-2010

Academic Honors

Friends of the Institute Membership Institute for Advanced Study	2018 - Present
Schmidt Fellowship Institute for Advanced Study	2015
Robert A. Millikan Fellowship California Institute of Technology	2010
International Fulbright Science and Technology Award Bureau of Education and Cultural Affairs, U.S. Department of State	2010
President's Gold Medal for the best academic performance in the graduating class in all disciplines, IIT Kanpur	2010
General Proficiency Medal for the best academic performance in the graduating class in Physics, IIT Kanpur	2010
Summer Undergraduate Research Fellowship California Institute of Technology	2007, 2008
Academic Excellence Award IIT Kanpur	2007, 2008, 2009, 2010
Silver Medal, 36th International Physics Olympiad	2005
KVPY Fellowship Department of Science and Technology, Govt. of India	2004
NTSE Fellowship National Council of Educational Research and Training, Govt. of India	2003

Work Experience

Member Institute for Advanced Study, Princeton	Sep 2015-Present
Associate International Center for Theoretical Sciences, Bangalore	2019-Present
Graduate Student California Institute of Technology, Pasadena <i>Advisor:</i> Christopher M. Hirata	Sep 2010-Aug 2015
Visiting Scientist Max-Planck-Institut für Physik komplexer Systeme, Dresden <i>Advisor:</i> Roderich Moessner	May-August 2009
Summer Undergraduate Research Fellow California Institute of Technology, Pasadena <i>Advisor:</i> Re'em Sari	May-August 2008
Summer Undergraduate Research Fellow California Institute of Technology, Pasadena <i>Advisor:</i> Andrew Lange	May-August 2007

Refereed publications

1. **Venumadhav, T.**, Dai, L., Kaurov, A., Zaldarriaga, M., (2018), Physical Review D, 98, 103513
(Editor's suggestion)
Title: Heating of the intergalactic medium by the cosmic microwave background during cosmic dawn
2. Kaurov, A., **Venumadhav, T.**, Dai, L., Zaldarriaga, M., (2018), Astrophys. J. Lett., 864, 1
Title: Implication of the Shape of the EDGES Signal for the 21 cm Power Spectrum
3. Dai, L., **Venumadhav, T.**, Kaurov, A., Miralda-Escudé, J., (2018), Astrophysical Journal, 867, 24
Title: Probing Dark Matter Subhalos in Galaxy Clusters Using Highly Magnified Stars
4. Hirata, C. M., Mishra, A., **Venumadhav, T.**, (2017), Physical Review D, 97, 103521
Title: Detecting primordial gravitational waves with circular polarization of the redshifted 21 cm line: I. Formalism
5. **Venumadhav, T.**, Dai, L., Miralda-Escudé, J., (2017), Astrophysical Journal, 850, 49
Title: Microlensing of extremely magnified stars near caustics of galaxy clusters
6. Gluscevic, V., **Venumadhav, T.**, Fang, X., Hirata, C. M., Oklopčić, A., Mishra, A. (2017), Physical Review D, 95, 083011
Title: A new probe of magnetic fields in the pre-reionization epoch: II. Detectability
7. **Venumadhav, T.**, Oklopčić, A., Gluscevic, V., Mishra, A., & Hirata, C. M. (2017), Physical Review D, 95, 083010
Title: A new probe of magnetic fields in the pre-reionization epoch: I. Formalism
8. Dai, L., **Venumadhav, T.**, Sigurdson, K. (2017), Physical Review D, 95, 044011
Title: The effect of lensing magnification on the apparent distribution of black hole mergers

9. **Venumadhav, T.**, Cyr-Racine, F.-Y., Abazajian, K. N., & Hirata, C. M. (2016), Physical Review D, 94, 043515
Title: Sterile neutrino dark matter: A tale of weak interactions in the strong coupling epoch
10. **Venumadhav, T.**, Chang, T.-C., Doré, O., & Hirata, C. M. (2015), Astrophysical Journal, 826, 116
Title: A practical theorem on using interferometry to measure the global 21 cm signal
11. **Venumadhav, T.**, & Hirata, C. M. (2015), Physical Review D, 91, 123009
Title: Stability of small-scale baryon perturbations during cosmological recombination
12. **Venumadhav, T.**, Zimmerman, A., & Hirata, C. M. (2014), Astrophysical Journal, 781, 23
Title: The stability of tidally deformed neutron stars to three- and four-mode coupling
13. **Venumadhav, T.**, Haque, M., & Moessner, R. (2010), Physical Review B, 81, 054305
Title: Finite-rate quenches of site bias in the Bose-Hubbard dimer

Preprints on the arxiv

1. Samsing, J., **Venumadhav, T.**, Dai, L., Martinez, I., Batta, A., Lopez Jr., M., Ramirez-Ruiz, E., Kremer, K., (2019), arXiv:1901.02889
Title: Probing the black hole merger history in clusters using stellar tidal disruptions
2. Haris, K., Mehta, A. K., Kumar, S., **Venumadhav, T.**, Parameswaran, A. (2018), arXiv:1807.07062
Title: Identifying strongly lensed gravitational wave signals from binary black hole mergers
3. Zackay, B., Dai, L., **Venumadhav, T.**, (2018), arXiv:1806.08792
Title: Relative Binning and Fast Likelihood Evaluation for Gravitational Wave Parameter Estimation
4. Dai, L., **Venumadhav, T.**, Zackay, B., (2018), arXiv:1806.08793
Title: Parameter Estimation for GW170817 using Relative Binning
5. Dai, L., **Venumadhav, T.**, (2017), arXiv:1702.04724
Title: On the waveforms of gravitationally lensed gravitational waves

n^{th} author papers

1. Doré, O., et. al., (2014), arXiv:1412.4872
Title: Cosmology with the SPHEREX All-Sky Spectral Survey
2. Bull, P., et. al., (2018), arXiv:1810.02680
Title: Fundamental Physics with the Square Kilometer Array

Professional Service

- Referee for Astroparticle Physics
- Referee for the Astrophysical Journal
- Referee for Monthly Notices of the Royal Astronomical Society Letters
- Referee for Monthly Notices of the Royal Astronomical Society
- Referee for Physical Review D

Other work

- Probing Primordial Magnetic Fields with 21-cm Line Observations of the High-redshift Intergalactic Medium
Oklopčić, A., Gluscevic, V., Hirata, C.M., Mishra, A., **Venumadhav, T.** (2014)
AAS presentation by Oklopčić, A.
- Spin-orbit resonances for satellites on highly eccentric orbits, SURF (2008)
Mentors: Re'em Sari and Daniel Babich
Report at http://www.its.caltech.edu/~tnerella/draft_v7.pdf
- Waveplate modeling, SURF (2007)
Mentor: Andrew Lange
Report at http://www.its.caltech.edu/~tnerella/waveplate_07.pdf

Talks and presentations

- | | |
|--|------|
| 1. Invited panelist, Physics and Astrophysics at the eXtreme, IUCAA, Pune. | 2018 |
| 2. Invited talk, Thermal history of the Universe at intermediate redshift: progress with 21cm absorption measurements, CERN. | 2018 |
| 3. Talk, Shedding Light on the Dark Universe with Extremely Large Telescopes, UCLA. | 2018 |
| 4. Invited Cosmology seminar, JHU, Baltimore. | 2017 |
| 5. Invited Seminar, CITA, Toronto. | 2017 |
| 6. Talk, Fundamental Physics with the Square Kilometer Array, Mauritius. | 2017 |
| 7. Invited talk, Tianlai Collaboration Meeting, Fermilab, Batavia. | 2016 |
| 8. Invited talk, CMB Spectral Distortions From Cosmic Baryon Evolution, RRI, Bengaluru. | 2016 |
| 9. Invited seminar, International Centre for Theoretical Sciences, TIFR. | 2016 |
| 10. Invited cosmology seminar, Perimeter institute. | 2016 |
| 11. Cosmology lunch, joint w/ IAS and Princeton University. | 2016 |
| 12. Astrophysics informal seminar, IAS. | 2016 |
| 13. Seminar, Inter University Center for Astronomy and Astrophysics, Pune. | 2015 |
| 14. Seminar, National Center for Radio Astronomy, Pune. | 2015 |
| 15. Talk, The Primordial Universe after Planck, IAP, Paris. | 2014 |
| 16. Seminar, McGill University, Montreal. | 2014 |
| 17. Seminar, CITA, Toronto. | 2014 |
| 18. ITC Seminar, Harvard University, Boston. | 2014 |
| 19. Cosmology lunch, joint w/ IAS and Princeton University. | 2014 |
| 20. Talk, Theoretical Astrophysics in Southern California (TASC), UCSD, San Diego. | 2014 |
| 21. Special seminar, KICP, University of Chicago. | 2014 |
| 22. Cosmology Lunch talk, CCAPP, Ohio State University, Columbus. | 2014 |

- 23. Poster, Gravitational Wave Physics and Astronomy Workshop (GWPAW) at IUCAA, Pune. 2013
- 24. Seminar, Inter University Center for Astronomy and Astrophysics, Pune. 2013
- 25. Talk, Theoretical Astrophysics in Southern California (TASC), Carnegie Observatories, Pasadena. 2012
- 26. Poster, Summer school on cosmology, ICTP, Trieste. 2012

Teaching Experience and outreach

- Lecturer, Summer School on Gravitational-Wave Astronomy, ICTS, Bangalore. Aug 2018
- Teaching assistant for Ph 12a: Waves, taught by Jeff Kimble Fall 2012
- Volunteer for event on occasion of partial solar eclipse Oct 2014
Location: McKinley School, Pasadena
- Volunteer for public viewing of Supernova SN2014J Jan 2014
Location: California Institute of Technology, Pasadena
- Volunteer for public event on the occasion of Venus transit May 2012
Location: California Institute of Technology, Pasadena

References

Christopher M. Hirata
The Ohio State University
191 West Woodruff Lane
Columbus, OH 43210, USA
email: hirata.10@osu.edu

Jordi Miralda Escudé
Institut de Ciències del Cosmos
Universitat de Barcelona
08028 Barcelona Catalonia, Spain
email: miralda@icc.ub.edu

Kevork N. Abazajian
University of California, Irvine
Department of Physics and Astronomy
2186 Frederick Reines Hall
Irvine, CA 92697, USA
email: kevork@uci.edu

Matias Zaldarriaga
Institute for Advanced Study
1 Einstein Drive
Princeton, NJ 08540, USA
email: matiasz@ias.edu

Olivier Doré
Jet Propulsion Laboratory
M/S 169-327
4800 Oak Grove Drive
Pasadena, CA 91109, USA
email: olivier.p.dore@jpl.nasa.gov