Tejaswi Venumadhav Nerella — Curriculum Vitae

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

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Education

California Institute of technology 2010-2015
Ph.D. in Physics,
Advisor: Christopher Hirata

Indian Institute of Technology, Kanpur 2005-2010
M.Sc (Integrated) in Physics

Academic Honors

Friends of the Institute Membership 2018 - Present
Institute for Advanced Study

Schmidt Fellowship 2015
Institute for Advanced Study

Robert A. Millikan Fellowship 2010
California Institute of Technology

International Fulbright Science and Technology Award 2010
Bureau of Education and Cultural Affairs, U.S. Department of State

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 2007, 2008
California Institute of Technology

Academic Excellence Award 2007, 2008, 2009, 2010
IIT Kanpur

Silver Medal, 36th International Physics Olympiad 2005

KVPY Fellowship 2004
Department of Science and Technology, Govt. of India

NTSE Fellowship 2003
National Council of Educational Research and Training, Govt. of India

Work Experience

Member Sep 2015-Present
Institute for Advanced Study, Princeton

Associate 2019-Present
International Center for Theoretical Sciences, Bangalore

Graduate Student Sep 2010-Aug 2015
California Institute of Technology, Pasadena
Advisor: Christopher M. Hirata

Visiting Scientist May-August 2009
Max-Planck-Institut für Physik komplexer Systeme, Dresden
Advisor: Roderich Moessner

Summer Undergraduate Research Fellow May-August 2008
California Institute of Technology, Pasadena
Advisor: Re'em Sari

Summer Undergraduate Research Fellow May-August 2007
California Institute of Technology, Pasadena
Advisor: Andrew Lange

Refereed publications

1. **Venumadhav, T.**, Zackay, B., Roulet, J., Dai, L., Zaldarriaga, M., (2019), Physical Review D, 100, 023011
   Title: A New Search Pipeline for Compact Binary Mergers: Results for Binary Black Holes in the First Observing Run of Advanced LIGO

2. Zackay, B., **Venumadhav, T.**, Dai, L., Roulet, J., Zaldarriaga, M., (2019), Physical Review D, 100, 023007 (Editor's suggestion)
   Title: Highly Spinning and Aligned Binary Black Hole Merger in the Advanced LIGO First Observing Run

3. Roulet, J., Dai, L., **Venumadhav, T.**, Zackay, B., Zaldarriaga, M., (2019), Physical Review D, 99, 123022
   Title: Template Bank for Compact Binary Coalescence Searches in Gravitational Wave Data: A General Geometric Placement Algorithm

4. Kaurov, A., Dai, L., **Venumadhav, T.**, Miralda-Escudé, J., Frye, B., (2019), Astrophysical Journal, 880, 1
   Title: Highly Magnified Stars in Lensing Clusters: New Evidence in a Galaxy Lensed by MACS J0416.1-2403

5. **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

6. 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

7. 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

8. 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

9. **Venumadhav, T.**, Dai, L., Miralda-Escudé, J., (2017), Astrophysical Journal, 850, 49
   Title: Microlensing of extremely magnified stars near caustics of galaxy clusters

10. 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

11. **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

12. 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

13. **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

14. **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

15. **Venumadhav, T.**, & Hirata, C. M. (2015), Physical Review D, 91, 123009
    Title: Stability of small-scale baryon perturbations during cosmological recombination

16. **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

17. **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. **Venumadhav, T.**, Zackay, B., Roulet, J., Dai, L., Zaldarriaga, M., (2019), arXiv:1904.07214
   Title: New Binary Black Hole Mergers in the Second Observing Run of Advanced LIGO and Advanced Virgo

2. Coleman, M., **Venumadhav, T.**, Zackay, B.,, (2019), arXiv:1903.04978
   Title: Gravitational-wave-moderated Accretion: The Case of ES Ceti

3. 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

4. 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

5. Zackay, B., Dai, L., **Venumadhav, T.**, (2018), arXiv:1806.08792
   Title: Relative Binning and Fast Likelihood Evaluation for Gravitational Wave Parameter Estimation

6. Dai, L., **Venumadhav, T.**, Zackay, B., (2018), arXiv:1806.08793
   Title: Parameter Estimation for GW170817 using Relative Binning

7. 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 Seminar, Princeton Gravity Initiative, Princeton. 2019
2. Invited Seminar, Albert Einstein Institute, Potsdam. 2019
3. Invited Seminar, Center for Cosmology and Particle Physics, NYU. 2019
4. Invited Seminar, Astronomy and Astrophysics, UC Santa Barbara. 2019
5. Invited Colloquium, Department of Physics, UC Santa Barbara. 2019
6. Invited panelist, Physics and Astrophysics at the eXtreme, IUCAA, Pune. 2018
7. Invited talk, Thermal history of the Universe at intermediate redshift: progress with 21cm absorption measurements, CERN. 2018
8. Talk, Shedding Light on the Dark Universe with Extremely Large Telescopes, UCLA. 2018
9. Invited Cosmology seminar, JHU, Baltimore. 2017

10. Invited Seminar, CITA, Toronto. 2017
11. Talk, Fundmental Physics with the Square Kilometer Array, Mauritius. 2017
12. Invited talk, Tianlai Collaboration Meeting, Fermilab, Batavia. 2016
13. Invited talk, CMB Spectral Distortions From Cosmic Baryon Evolution, RRI, Bengaluru. 2016
14. Invited seminar, International Centre for Theoretical Sciences, TIFR. 2016
15. Invited cosmology seminar, Perimeter institute. 2016
16. Cosmology lunch, joint w/ IAS and Princeton University. 2016
17. Astrophysics informal seminar, IAS. 2016
18. Seminar, Inter University Center for Astronomy and Astrophysics, Pune. 2015
19. Seminar, National Center for Radio Astronomy, Pune. 2015
20. Talk, The Primordial Universe after Planck, IAP, Paris. 2014
21. Seminar, McGill University, Montreal. 2014
22. Seminar, CITA, Toronto. 2014
23. ITC Seminar, Harvard University, Boston. 2014
24. Cosmology lunch, joint w/ IAS and Princeton University. 2014
25. Talk, Theoretical Astrophysics in Southern California (TASC), UCSD, San Diego. 2014
26. Special seminar, KICP, University of Chicago. 2014
27. Cosmology Lunch talk, CCAPP, Ohio State University, Columbus. 2014
28. Poster, Gravitational Wave Physics and Astronomy Workshop (GWPAW) at IUCAA, Pune. 2013
29. Seminar, Inter University Center for Astronomy and Astrophysics, Pune. 2013
30. Talk, Theoretical Astrophysics in Southern California (TASC), Carnegie Observatories, Pasadena. 2012
31. 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
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Columbus, OH 43210, USA
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Pasadena, CA 91109, USA
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