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 2010-2015
Ph.D. in Physics,
Advisor: Christopher Hirata

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

Academic Honors

John Bahcall Fellowship 2019 - present
Institute for Advanced Study

Schmidt Fellowship 2015 - 2018
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. Samsing, J., **Venumadhav, T.**, Dai, L., Martinez, I., Batta, A., Lopez Jr., M., Ramirez-Ruiz, E., Kremer, K., (2019), Physical Review D, 100, 043009
   Title: Probing the Black Hole Merger History in Clusters using Stellar Tidal Disruptions

2. **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

3. 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

4. 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

5. 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

6. **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

7. 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

8. 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

9. 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

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

11. 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

12. **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

13. 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

14. **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

15. **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

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

17. **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

18. **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. Zackay, B., Dai, L., **Venumadhav, T.**, Roulet, J., Zaldarriaga, M., (2019), arXiv:1910.09528
   Title: Detecting Gravitational Waves With Disparate Detector Responses: Two New Binary Black Hole Mergers

2. Zackay, B., **Venumadhav, T.**, Roulet, J., Dai, L., Zaldarriaga, M., (2019), arXiv:1908.05644
   Title: Detecting Gravitational Waves in Data with Non-Gaussian Noise

3. **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

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

5. 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

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

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

8. Dai, L., **Venumadhav, T.**, (2017), arXiv:1702.04724
   Title: On the waveforms of gravitationally lensed gravitational waves

n^{th} author papers

1. Dai, L., et. al., (2020), arXiv: 2001.00261
   Title: Asymmetric Surface Brightness Structure of Lensed Arc in SDSS J1226+2152: A Case for Dark Matter Substructure

2. Bull, P., et. al., (2018), arXiv:1810.02680
   Title: Fundamental Physics with the Square Kilometer Array

3. Doré, O., et. al., (2014), arXiv:1412.4872
   Title: Cosmology with the SPHEREX All-Sky Spectral Survey

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 Talk, Gravitational wave searches and parameter estimation in the era of detections, Schloss Ringberg. 2020

2. Invited Seminar, Indian Institute of Technology, Mumbai. 2020

3. Invited Seminar, Tata Institute of Fundamental Research, Mumbai. 2019

4. Invited Talk, Frank N. Bash Symposium, UT Austin. 2019
5. Talk, Gravitational Wave Physics and Astronomy Workshop, Tokyo. 2019
6. Invited Talk, Black Holes and Neutron Stars with Gravitational Waves, YITP, Kyoto. 2019
7. Invited Colloquium, Black Hole Initiative, Harvard. 2019
8. Invited panelist, The Future of Gravitational-Wave Astronomy, Bangalore. 2019
9. Invited Seminar, International Centre for Theoretical Sciences, TIFR. 2019
10. Invited Seminar, Princeton Gravity Initiative, Princeton. 2019
11. Invited Seminar, Albert Einstein Institute, Potsdam. 2019
12. Invited Seminar, Center for Cosmology and Particle Physics, NYU. 2019
13. Invited Seminar, Astronomy and Astrophysics, UC Santa Barbara. 2019
14. Invited Colloquium, Department of Physics, UC Santa Barbara. 2019
15. Invited panelist, Physics and Astrophysics at the eXtreme, IUCAA, Pune. 2018
16. Invited talk, Thermal history of the Universe at intermediate redshift: progress with 21cm absorption measurements, CERN. 2018
17. Talk, Shedding Light on the Dark Universe with Extremely Large Telescopes, UCLA. 2018
18. Invited Cosmology seminar, JHU, Baltimore. 2017
19. Invited Seminar, CITA, Toronto. 2017
20. Talk, Fundmental Physics with the Square Kilometer Array, Mauritius. 2017
21. Invited talk, Tianlai Collaboration Meeting, Fermilab, Batavia. 2016
22. Invited talk, CMB Spectral Distortions From Cosmic Baryon Evolution, RRI, Bengaluru. 2016
23. Invited seminar, International Centre for Theoretical Sciences, TIFR. 2016
24. Invited cosmology seminar, Perimeter institute. 2016
25. Cosmology lunch, joint w/ IAS and Princeton University. 2016
26. Astrophysics informal seminar, IAS. 2016
27. Seminar, Inter University Center for Astronomy and Astrophysics, Pune. 2015
28. Seminar, National Center for Radio Astronomy, Pune. 2015
29. Talk, The Primordial Universe after Planck, IAP, Paris. 2014
30. Seminar, McGill University, Montreal. 2014
31. Seminar, CITA, Toronto. 2014
32. ITC Seminar, Harvard University, Boston. 2014
33. Cosmology lunch, joint w/ IAS and Princeton University. 2014
34. Talk, Theoretical Astrophysics in Southern California (TASC), UCSD, San Diego. 2014

35. Special seminar, KICP, University of Chicago. 2014

36. Cosmology Lunch talk, CCAPP, Ohio State University, Columbus. 2014

37. Poster, Gravitational Wave Physics and Astronomy Workshop (GWPAW) at IUCAA, Pune. 2013

38. Seminar, Inter University Center for Astronomy and Astrophysics, Pune. 2013

39. Talk, Theoretical Astrophysics in Southern California (TASC), Carnegie Observatories, Pasadena. 2012

40. Poster, Summer school on cosmology, ICTP, Trieste. 2012

Teaching Experience and outreach

- Lecturer, Newton-Bhabha & the Open Data Workshop, IUCAA, Pune. Dec 2019
- 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

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

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

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