

Aditya Vijaykumar

aditya@utoronto.ca • Canadian Institute for Theoretical Astrophysics (CITA) • Website • NASA ADS

PAPERS (SHORT AUTHORLIST)

26. Madison VanWyngarden, Maya Fishbach, **Aditya Vijaykumar**, Alexandra G. Guerrero, Daniel E. Holz
How Low Can You Go: Constraining the Effects of Catalog Incompleteness on Dark Siren Cosmology
Submitted to ApJ, [arXiv:2511.04786](#).
25. Hui Tong et al. (including **Aditya Vijaykumar**)
Evidence of the pair instability gap in the distribution of black hole masses
Submitted to Nature, [arXiv:2509.04151](#).
24. Colm Talbot et al. (including **Aditya Vijaykumar**)
Inference with finite time series II: the window strikes back
Submitted to CQG, [arXiv:2508.11091](#).
23. Avinash Tiwari, Prolay Chanda, Shasvath J. Kapadia, Susmita Adhikari, **Aditya Vijaykumar**, Basudeb Dasgupta
Profiling Dark Matter Spikes with Gravitational Waves from Accelerated Binaries
Submitted to PRL, [arXiv:2508.03803](#).
22. Andris Doroszkai, Isobel M. Romero-Shaw, **Aditya Vijaykumar**, Silvia Toonen, et al.
Hierarchical Triples vs. Globular Clusters: Binary black hole merger eccentricity distributions compete and evolve with redshift
Submitted to MNRAS, [arXiv:2507.23212](#).
21. Avinash Tiwari, **Aditya Vijaykumar**, Shasvath J. Kapadia, Shrobana Ghosh, Alex B. Nielsen
A pipeline to search for signatures of line-of-sight acceleration in gravitational wave signals produced by compact binary coalescences
Submitted to PRD, [arXiv:2506.22272](#).
20. Kanchan Soni, **Aditya Vijaykumar**, Sanjit Mitra
Assessing the potential of LIGO-India in resolving the Hubble Tension
Submitted to CQG, [arXiv:2409.11361](#).
19. Avinash Tiwari, **Aditya Vijaykumar**, Shasvath J. Kapadia, Sourav Chatterjee, Giacomo Fragione
Profiling stellar environments of gravitational wave sources
Phys. Rev. D **112**, 084034, [arXiv:2407.15117](#).
18. Alexandra G. Hanselman, **Aditya Vijaykumar**, Maya Fishbach, Daniel E. Holz
Gravitational-wave dark siren cosmology systematics from galaxy weighting
ApJ **979** 9, [arXiv:2405.14818](#).
17. Sreejith Nair, **Aditya Vijaykumar**, Sudipta Sarkar
Bounds on the charge of the graviton using gravitational wave observations
JCAP **11** (2024) 004, [arXiv:2405.05038](#).
16. **Aditya Vijaykumar**, Alexandra G. Hanselman, Michael Zevin
Consistent eccentricities for gravitational wave astronomy: Resolving discrepancies between astrophysical simulations and waveform models
ApJ **969** 132, [arXiv:2402.07892](#).
15. Mukesh Kumar Singh, Shasvath J. Kapadia, **Aditya Vijaykumar**, Parameswaran Ajith
Impact of higher harmonics of gravitational radiation on the population inference of binary black holes
ApJ **971** 23, [arXiv:2312.07376](#).
14. Kruthi Krishna, **Aditya Vijaykumar**, Apratim Ganguly, et al
Accelerated parameter estimation in Bilby with relative binning
[arXiv:2312.06009](#).

13. **Aditya Vijaykumar**, Maya Fishbach, Susmita Adhikari, Daniel E. Holz
Inferring host galaxy properties of LIGO-Virgo-KAGRA's black holes
ApJ 972 157, [arXiv:2312.03316](#).
12. Divyajyoti, N.V. Krishnendu, Muhammed Saleem, Marta Colleoni, **Aditya Vijaykumar**, K.G. Arun, Chandra Kant Mishra
Effect of double spin-precession and higher harmonics on spin-induced quadrupole moment measurements
Phys. Rev. D 109, 023016, [arXiv:2311.05506](#).
11. Avinash Tiwari, **Aditya Vijaykumar**, Shasvath J. Kapadia, Giacomo Fragione, Sourav Chatterjee
Accelerated binary black holes in globular clusters: forecasts and detectability in the era of space-based gravitational-wave detectors
MNRAS, 527, 8586, [arXiv:2307.00930](#).
10. **Aditya Vijaykumar**, Avinash Tiwari, Shasvath J. Kapadia, K.G. Arun, Parameswaran Ajith
Waltzing binaries: Probing line-of-sight acceleration of merging compact objects with gravitational waves
ApJ 954 105, [arXiv:2302.09651](#).
In press: Astrobites
9. Adhrit Ravichandran, **Aditya Vijaykumar**, Shasvath J. Kapadia, Prayush Kumar
Rapid Identification and Classification of Eccentric Gravitational Wave Inspirals with Machine Learning
Submitted to PRD, [arXiv:2302.00666](#).
8. Srashti Goyal, **Aditya Vijaykumar**, Jose Maria Ezquiaga, Miguel Zumalacarregui
Probing lens-induced gravitational-wave birefringence as a test of general relativity
Phys. Rev. D 108, 024052, [arXiv:2301.04826](#).
In press: Astrobites
7. Bikram Keshari Pradhan, **Aditya Vijaykumar**, Debarati Chatterjee
Impact of updated Multipole Love and f-Love Universal Relations in context of Binary Neutron Stars
Phys. Rev. D 107, 023010, [arXiv:2210.09425](#).
6. **Aditya Vijaykumar**, Shasvath J. Kapadia, Parameswaran Ajith
Can a binary neutron star merger in the vicinity of a supermassive black hole enable a detection of a post-merger gravitational wave signal?
MNRAS, 513, 3577, [arXiv:2202.08673](#).
5. **Aditya Vijaykumar**, Ajit Kumar Mehta, Apratim Ganguly
Detection and parameter estimation challenges of Type-II lensed binary black hole signals
Phys. Rev. D 108, 043036, [arXiv:2202.06334](#).
4. Sumit Kumar, **Aditya Vijaykumar**, Alexander H. Nitz
Detecting Baryon Acoustic Oscillations with third generation gravitational wave observatories,
ApJ 930 113, [arXiv:2110.06152](#).
3. M. Saleem et al. (including **Aditya Vijaykumar**)
The Science Case for LIGO-India
Class. Quantum Grav. 39 025004, [arXiv:2105.01716](#).
2. **Aditya Vijaykumar**, M. V. S. Saketh, Sumit Kumar, Parameswaran Ajith, Tirthankar Roy Choudhury
Probing the large scale structure using gravitational wave observations of binary black holes,
Phys. Rev. D 108, 103017, [arXiv:2005.01111](#).
In press: Astrobites.
1. **Aditya Vijaykumar**, Shasvath J. Kapadia, Parameswaran Ajith
Constraints on the time variation of the gravitational constant using gravitational wave observations of binary neutron stars,
Phys. Rev. Lett. 126, 141104, [arXiv:2003.12832](#).
In press: phys.org.

PAPERS (LONG
AUTHORLIST,
WITH
SUBSTANTIAL
CONTRIBUTION)

9. Abac et al. (LIGO Scientific, Virgo, and KAGRA Collaborations)
GW₂₄₁₀₁₁ and GW₂₄₁₁₁₀: Exploring Binary Formation and Fundamental Physics with Asymmetric, High-spin Black Hole Coalescences,
[ApJL](#), [arXiv:2510.26931](#).
8. Abac et al. (LIGO Scientific, Virgo, and KAGRA Collaborations)
Upper Limits on the Isotropic Gravitational-Wave Background from the first part of LIGO, Virgo, and KAGRA's fourth Observing Run,
[arXiv:2508.20721](#).
7. Abac et al. (LIGO Scientific, Virgo, and KAGRA Collaborations) [**Paper Writing Team Lead**]
GWTC-4.0: Population Properties of Merging Compact Binaries,
[arXiv:2508.18083](#).
6. Abac et al. (LIGO Scientific, Virgo, and KAGRA Collaborations)
GWTC-4.0: Updating the Gravitational-Wave Transient Catalog with Observations from the First Part of the Fourth LIGO-Virgo-KAGRA Observing Run,
[arXiv:2508.18082](#).
5. Abac et al. (LIGO Scientific, Virgo, and KAGRA Collaborations)
GW₂₃₁₁₂₃: a Binary Black Hole Merger with Total Mass 190-265 M_{\odot} ,
[arXiv:2507.08219](#).
4. Abbott et al. (LIGO Scientific and Virgo Collaborations)
Tests of General Relativity with GWTC-3,
Accepted to *Physical Review D*, [arXiv:2112.06861](#).
3. Abbott et al. (LIGO Scientific and Virgo Collaborations)
Tests of General Relativity with Binary Black Holes from the second LIGO-Virgo Gravitational-Wave Transient Catalog,
Phys. Rev. D **103** (2021) 12, 122002, [arXiv:2010.14529](#).
2. Abbott et al. (LIGO Scientific and Virgo Collaborations)
GWTC-2: Compact Binary Coalescences Observed by LIGO and Virgo During the First Half of the Third Observing Run,
Phys. Rev. X **11** (2021) 021053, [arXiv:2010.14527](#).
1. P. Virtanen et al. (including **Aditya Vijaykumar** as *SciPy 1.0 Contributor*)
SciPy 1.0—Fundamental Algorithms for Scientific Computing in Python,
Nat Methods **17**, 261–272 (2020), [arXiv:1907.10121](#).