Nikhil Sarin

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Education

Monash University
Ph.D., Astrophysics, Feb 2018-April 2021 (expected).
Thesis: "The observational consequences of neutron star post-merger remnants" supervised by Dr. Paul Lasky and Dr. Greg Ashton.
Fields: neutron star mergers, gamma-ray bursts, gravitational waves

Honours (1^{st} class)., Astrophysics, 2017.
Thesis: "Gamma-ray burst afterglows and gravitational waves" supervised by Dr. Paul Lasky and Dr. Letizia Sammut.

BSc, Major in Astrophysics and Geology, 2014-2016.

Teaching

School of Physics & Astronomy, Monash University
Teaching assistant, PHS1031 - Physics for the living world, 2017
Teaching assistant, ASP1011 - Introduction to astronomy, 2017
Teaching assistant, PHS1011 - Classical physics and relativity, 2018
Tutor, ASP2062 - Introduction to astrophysics, 2018
Tutor, ASP2011 - Astronomy, 2019
Tutor, ASP3162 - Computational Astrophysics, 2019
Tutor, ASP2011 - Relativity and Cosmology, 2020

Awards and Fellowships

Research Training Scheme
PhD Scholarship, Australian Research Council, 2018-2021

Runner-up student talk
Runner-up student talk at the Astronomical Society of Australia (ASA) meeting, 2018

MoCA prize
Best Honours student in Astrophysics, Monash University, 2017

J.L Williams Honours Scholarship
Honours scholarship, 2017

Monash Science future leaders
Science future leaders program (Emerald Tier), 2015

Languages and Skills

English, Hindi
Python, LaTeX, Git, Bash, Fortran, Mathematica, HTML, Stan

Conferences

Yokohama Yamada conference, November 2019
Gamma-ray bursts in the gravitational-wave era in Yokohama, Japan.

YITP, long-term workshop, September-October 2019
Multi-messenger astrophysics in the gravitational-wave era. long-term workshop in Kyoto.

LIGO PE F2F, February 2019
LIGO parameter estimation group meeting to develop LIGO parameter-estimation infrastructure.

ANITA meeting, February 2019
Annual Australian National Institute for Theoretical Astrophysics (ANITA) meeting at Swinburne University.

OzGrav retreat, December 2018
Australian research council centre for excellence for gravitational-wave research (OzGrav) annual retreat at Novotel Vines resort, Perth.

ASA meeting, July 2018
Annual Astronomical Society of Australia meeting at Swinburne University.

ANITA meeting, February 2018
ANITA meeting at University of Western Australia.

Service

I have served as a referee for The Astrophysical Journal, The Astrophysical Journal Letters and as an internal peer-reviewer in the LIGO Scientific Collaboration.

Publications

Listed below are only publications for which I have made significant contributions. I am an author on numerous other publications as a member of the LIGO Scientific Collaboration.

Refereed

Sarin, Lasky & Ashton (2020), *Gravitational waves or deconfined quarks: What causes the premature collapse of neutron stars born in short gamma-ray bursts?*, PRD, 101:063021

Sarin, Lasky & Ashton (2019), *X-ray afterglows of short gamma-ray bursts: Magnetar or Fireball?*, ApJ, 872:114

Sarin, Lasky, Sammut & Ashton (2018), *X-ray guided gravitational-wave search for binary neutron star merger remnants*, PRD, 98:043011.

Ashton, Hübner, Talbot, Lasky et al. (2019), *Bilby: A user-friendly Bayesian inference library for gravitational-wave astronomy*, ApJS 241:2
My contribution: As one of the developers for the Bilby code, my key contributions have been to implement Monte-Carlo Gaussian noise realisations, the reduced-order quadrature likelihood for compact binary coalescences, and unit tests.

The LIGO-Virgo Scientific Collaboration, Abbott et al. (2019), *Search for Gravitational Waves from a Long-lived Remnant of the Binary Neutron Star Merger GW170817.* ApJ, 875:2
My contribution: I was on the paper writing team, contributing significantly to the writing of the introduction and waveform sections. I contributed to the astrophysical interpretation of the results, and calculated detection thresholds for similar signals with third-generation detectors.

The LIGO-Virgo Scientific Collaboration, Abbott et al. (2017), *Search for post-merger gravitational waves from the remnant of the binary neutron star merger GW170817* ApJL, 851, L16.
My contribution: I helped develop the waveform models that were used to set the upper-limit on potential gravitational-wave emission.

Conference Proceedings

Sarin, Lasky & Ashton (2020), *The premature collapse of neutron stars born in short gamma-ray bursts.* Conference Proceedings of the Yokohama Yamada conference.

Lasky, P., **Sarin** & Ashton (2019), *Neutron Star Merger Remnants: Braking Indices, Gravitational Waves, and the Equation Of State.* Conference Proceedings of the Xiamen-CUSTIPEN Workshop