

Soumi De

CURRICULUM VITAE

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EDUCATION

PhD Candidate, Department of Physics

Syracuse University, USA

Aug 2015 - Jun 2020

Advisor: Prof. Duncan Brown

MSc. (First Class) in Physics

University of Calcutta, India

2012 - 2014

BSc. in Physics (First Class Honours), minor: Mathematics and Chemistry

St. Xavier's College, Kolkata, India

2009 - 2012

HONORS, AWARDS, AND FELLOWSHIPS

Research Excellence Doctoral Funding Fellowship, Syracuse University

2019-2020

- Awarded to 36 graduate students across 16 departments.

Inaugural Kathy '73 and Stan '72 Walters Endowed Fund for Science Research,

Syracuse University

2018

- Awarded to 1 candidate across all Science disciplines.

Kavli Student Fellow, Kavli Summer Program in Astrophysics, Copenhagen, Denmark

2017

- Granted to 14 graduate students from institutes across the USA and Europe to conduct research projects in astrophysics in collaboration with senior scientists in the program.

Princess of Asturias Award for Technical and Scientific Research, as a member of the LIGO Scientific Collaboration

2017

Special Breakthrough Prize in Fundamental Physics, as a member of the LIGO Scientific Collaboration

2016

Gruber Cosmology Prize, as a member of the LIGO Scientific Collaboration

2016

Indian Science Academies' Summer Research Fellow

2013

- Granted to 241 Physics Bachelors and Masters students across India to conduct research projects in their preferred institute.

Visiting Students' Programme Research Fellowship

2013

- Granted to 12 Masters students across India to conduct research projects in Astronomy and Astrophysics at IUCAA.

PUBLICATIONS & PRODUCTS

SHORT AUTHOR - REFEREED AND PREPRINTS :

7. **Soumi De**, Morgan MacLeod, Rosa Wallace Everson, Andrea Antoni, Ilya Mandel, Enrico Ramirez-Ruiz, *Common Envelope Wind Tunnel: The effects of binary mass ratio and implications for the accretion-driven growth of LIGO binary black holes*, arXiv:1910.13333 (2019), Accepted by Astrophysical Journal.
6. Collin D. Capano, Ingo Tews, Stephanie M. Brown, Ben Margalit, **Soumi De**, Sumit Kumar, Duncan A. Brown, Badri Krishnan, Sanjay Reddy, *GW170817: Stringent constraints on neutron-star radii from multimessenger observations and nuclear theory*, Nat Astron (2020) <https://doi.org/10.1038/s41550-020-1014-6>, arXiv:1908.10352.
5. Michael Forbes, Sukanta Bose, Sanjay Reddy, Dake Zhou, Arunava Mukherjee, **Soumi De**, *Constraining the neutron-matter equation of state with gravitational waves*, Phys. Rev. D, 100, 083010 (2019).
4. **Soumi De**, Christopher M. Biwer, Collin D. Capano, Alexander H. Nitz, Duncan A. Brown, *Posterior samples of the parameters of binary black holes from Advanced LIGO, Virgo's second observing run*, Nature Scientific Data 6, 81 (2019).
3. Christopher M. Biwer, Collin D. Capano, **Soumi De**, Miriam Cabero, Alexander H. Nitz, Duncan A. Brown, Vivien Raymond, *PyCBC Inference: A Python-based parameter estimation toolkit for compact binary coalescence signals*, Publ. Astron. Soc. Pac., 131, 996 (2019).
2. **Soumi De**, Daniel Finstad, James M. Lattimer, Duncan A. Brown, Edo Berger, Christopher M. Biwer, *Tidal Deformabilities and Radii of Neutron Stars from the Observation of GW170817*, Phys. Rev. Lett., 121, 091102 (2018).
1. Daniel Finstad, **Soumi De**, Duncan A. Brown, Edo Berger, Christopher M. Biwer, *Measuring the viewing angle of GW170817 with electromagnetic and gravitational waves*, Astrophys. J. Lett. 860, L2 (2018).

LIGO SCIENTIFIC COLLABORATION PUBLICATIONS:

Following are the publications that I have contributed to as member of the collaboration from Sep 2015 to Jan 2018

7. B. P. Abbott et al., *GW170817: Observation of gravitational waves from a binary neutron star inspiral*, Phys. Rev. Lett., 119, 161101 (2017).
6. B. P. Abbott et al., *Muti-messenger observations of a binary neutron star merger*, Astrophys. J. Lett., 848, 2 (2017).
5. B. P. Abbott et al., *Binary Black Hole Mergers in the First Advanced LIGO Observing Run*, Phys. Rev. X 6, 041015 (2016).
4. B. P. Abbott et al., *GW151226: Observation of Gravitational Waves from a 22-Solar-Mass Binary Black Hole Coalescence*, Phys. Rev. Lett., 116, 241103 (2016).
3. B. P. Abbott et al., *The Rate of Binary Black Hole Mergers Inferred from Advanced LIGO Observations Surrounding GW150914*, Astrophys. J. Lett. 833, 1 (2016).
2. B. P. Abbott et al., *GW150914: First Results from the Search for Binary Black Hole Coalescence with Advanced LIGO*, Phys. Rev. D 93, 122003 (2016).

1. B. P. Abbott et al., *Observation of Gravitational Waves from a Binary Black Hole Merger*, Phys. Rev. Lett., 116, 061102 (2016).

PRESENTATIONS

INVITED TALKS :

- Strong Gravity Seminar, Perimeter Institute for Theoretical Physics** Mar 2020
 Waterloo, Canada
Modeling the Common Envelope Inspiral Phase and Formation of LIGO's Binary Black Holes
- Data Science Seminar, Los Alamos National Laboratory** Feb 2020
 Los Alamos, New Mexico, USA
Characterizing neutron stars and black holes with gravitational-wave data science: Techniques and digital infrastructures
- Astrophysics Seminar, Los Alamos National Laboratory** Feb 2020
 Los Alamos, New Mexico, USA
Probing neutron star and black hole binaries in the era of multi-messenger astronomy: From simulations to observations
- International Workshop on Gross Properties of Nuclei and Nuclear Excitations** Jan 2020
 Hirschegg, Austria
Tidal deformabilities and radii of neutron stars from multimessenger observations
- High Energy Phenomena Seminar, Harvard Smithsonian Center for Astrophysics** Feb 2019
 Cambridge, Massachusetts, USA
Constraining the properties and evolution of neutron star and black hole binaries from gravitational-wave observations
- Gravitational Wave Physics and Astronomy Workshop** Dec 2018
 College Park, Maryland, USA
Tidal Deformabilities and Radii of Neutron Stars from the Observation of GW170817
- Kavli Summer Program in Astrophysics** Aug 2017
 Niels Bohr Institute, Copenhagen, Denmark
Effect of mass ratio on Common Envelope flows

CONTRIBUTED TALKS :

- American Physical Society April meeting** Apr 2019
 Denver, Colorado, USA
Tidal Deformabilities and Radii of Neutron Stars from the Observation of GW170817
- Conference on Computational Physics** Aug 2018
 University of California, Davis, USA
Parameter Estimation of Compact Binaries using PyCBC Inference
- Eastern Gravity Meeting, Long Island University** May 2018
 Brooklyn, USA
Constraining the nuclear equation of state with GW170817

PROFESSIONAL DEVELOPMENT

MESA (Modules for Experiments in Stellar Astrophysics) Summer School University of California, Santa Barbara	Summer School <i>Aug 2019</i>
The New Era of Gravitational-Wave Physics and Astrophysics Kavli Intitute for Theoretical Physics	Summer Program <i>May - Jul 2019</i>
Neutron Star Merger Summer School, Facility for Rare Isotope Beams Michigan State University	Summer School <i>Apr 2018</i>
Astrophysics from a Neutron Star Merger Kavli Intitute for Theoretical Physics	Conference <i>Dec 2017</i>
Kavli Summer Program in Astrophysics Niels Bohr Institute, Copenhagen	Summer Program <i>Jul - Aug 2017</i>
Open Science Grid User School University of Wisconsin, Madison, Computer Sciences Department	Summer School <i>Jul 2016</i>