

Koustav Chandra

Indian Institute of Technology, Bombay

✉ koustav.chandra@iitb.ac.in

RESEARCH INTEREST

Gravitational Wave Searches, Bayesian inference, Intermediate-Mass Black Holes

EDUCATION

Indian Institute of Technology, Bombay | Research Scholar

Aug 2018-Present

Department of Physics

- Expected: July 2023
- Theme: Probing Compact Objects with Gravitational Wave Transients
- Supervisor: Prof. Archana Pai

National Institute of Technology, Rourkela | Graduate Student

April 2013-May 2018

Department of Physics & Astronomy

- Integrated Masters in Science (Physics)
- Thesis: An Algebraic Study of $SO(10)$ Grand Unified Theory
- Supervisor: Prof. Sasmita Mishra

INTERNSHIP

Indian Institute of Technology, Bombay

Summer 2017

Department of Physics

- Topic: A study of ρ^0 decay kinematics
- Supervisor: Prof Basanta Kumar Nandi

Indian Institute of Technology, Bombay

Summer 2016

Department of Physics

- Topic: Elliptic Flow of φ^0 meson and strange quark collectivity
- Supervisor: Prof Basanta Kumar Nandi

Indian Institute of Technology, Mandi

Summer 2015

Department of Physics

- Topic: Magneto-Transport Study of Superconducting materials
- Supervisor: Prof Chandra Shekhar Yadav

PUBLICATIONS

Short Author Papers

- GW190521 as a black-hole merger coincident with the ZTF19abanzhr flare
Juan Calderón Bustillo, Samson H.W. Leong, **Koustav Chandra**, Barry McKernan, K. E. S. Ford
[arXiv:2112.12481](https://arxiv.org/abs/2112.12481)
- An optimized PyCBC search for gravitational waves from intermediate-mass black hole mergers
Koustav Chandra, V. Villa-Ortega, T. Dent, C. McIsaac, Archana Pai, I. W. Harry, G. S. Cabourn Davies, K. Soni
[Physical Review D 104, 042004](https://arxiv.org/abs/2106.00193) [arxiv:2106.00193](https://arxiv.org/abs/2106.00193)
- Numerical relativity injection analysis of signals from generically spinning intermediate mass black hole binaries in Advanced LIGO data.
Koustav Chandra, V. Gayathri, Juan Calderón Bustillo, and Archana Pai
[Physical Review D 102, 044035](https://arxiv.org/abs/2002.10666) [arXiv:2002.10666](https://arxiv.org/abs/2002.10666)

LIGO-Virgo-Kagra publications to which I contributed significantly

- Search for intermediate mass black hole binaries in the third observing run of Advanced LIGO and Advanced Virgo
Abbott et al. (LIGO Scientific and Virgo Collaborations, including **Koustav Chandra**,
Accepted by Astronomy & Astrophysics [arxiv:2105.15120](https://arxiv.org/abs/2105.15120)
- GWTC-2: Compact Binary Coalescences Observed by LIGO and Virgo During the First Half of the Third Observing Run
Abbott et al. (LIGO Scientific and Virgo Collaborations, including **Koustav Chandra**,
[Physical Review X 11, 021053](https://arxiv.org/abs/2010.14527) [arXiv:2010.14527](https://arxiv.org/abs/2010.14527)
- GW190521: A Binary Black Hole Merger with a Total Mass of $150 M_{\odot}$
Abbott et al. (LIGO Scientific and Virgo Collaborations, including **Koustav Chandra**,
[Physical Review Letters 125, 101102](https://arxiv.org/abs/2009.01075) [arXiv:2009.01075](https://arxiv.org/abs/2009.01075)

CONFERENCE PARTICIPATION

Talks

- Hunting for intermediate-mass black hole with international gravitational-wave observatory network
2nd Chennai Symposium on Gravitation and Cosmology[†]
Chennai, India, (online), Feb'22
- An optimised PyCBC search for gravitational waves from intermediate-mass black hole mergers
14th Edoardo Amaldi Conference
Melbourne, Australia, (online), Jul'21.
- An optimised PyCBC search for gravitational waves from intermediate-mass black hole mergers
Sixteenth Marcel Grossmann Meeting
Rome, Italy, (online), Jul'21
- Search for Intermediate Mass Black Hole Binary with higher order modes
LIGO-Virgo-KAGRA Collaboration Meeting,
University of Wisconsin-Madison, USA (online), Mar'21
- Search Sensitivity of IMBHB systems in the gravitational wave window
XXXVIII Meeting of Astronomical Society of India,
Indian Institute of Science Education and Research, Tirupati, India, Feb'20

Posters

- NuRIA: Sensitivity study of generically spinning intermediate mass black hole binaries in Advanced LIGO data
31st meeting of the Indian Association for General Relativity and Gravitation,
Indian Institute of Technology, Gandhinagar, India (Online), Dec'20
- Increasing the sensitivity of ground-based gravitational wave detectors to a non-GR mode of polarisation
International Conference on Gravitation & Cosmology 2019,
Indian Institute of Science Education and Research, Mohali, India, Dec'19

SCIENTIFIC OUTREACH

Talks

- How to search Gravitational Waves with PyCBC (tutorial)
Krittika-Winter-Workshops, Techfest-2021,
Indian Institute of Technology, Bombay, India (Online), Jan'21
- Gravitational Waves-101
Vigyan Samagam,
Nehru Science Centre, Mumbai, May 2019

Articles

- **GW190521: The Most Massive Black Hole Collision Observed To Date,**
Tyson Littenberg, Juan Calderón Bustillo and Koustav Chandra,
Summaries of LSC Scientific Publications, Sep'20
- **Search for intermediate mass black hole binaries in the first and second observing runs of the Advanced LIGO and Virgo network**
Koustav Chandra and Archana Pai
Summaries of LSC Scientific Publications, Jun'19

SKILLS

Computing

- **Programming Languages:** Very familiar with both Python and C. Comfortable with Shell Script
- **Operating System:** Familiar with various Linux distributions and macOS
- **Other Scientific Tools:** Familiar with LaTeX and Git

Language

- **Proficient:** English, Hindi
- **Native:** Bengali
- **Basic:** Odia