

# Koustav Chandra

Indian Institute of Technology, Bombay

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

**National Institute of Technology, Rourkela** | Graduate Student

April 2016-May 2018

Department of Physics & Astronomy

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

**National Institute of Technology, Rourkela** | Undergraduate Student

April 2013-May 2016

Department of Physics & Astronomy

- BS in Physics

## INTERNSHIP

**Indian Institute of Technology, Bombay**

Summer 2017

Department of Physics

- Topic: A study of  $\rho^0$  decay kinematics
- Supervisor: Prof Basanta Kumar Nandi

**Indian Institute of Technology, Bombay**

Summer 2016

Department of Physics

- Topic: Elliptic Flow of  $\varphi^0$  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

### First Author Papers

- An optimized PyCBC search for gravitational waves from intermediate-mass black hole mergers  
**Koustav Chandra**, V. Villa-Ortega, T. Dent, C. Mclsaac, Archana Pai, I. W. Harry, G. S. Cabourn Davies, K. Soni  
In preparation
- 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](#) [arXiv:2002.10666](#)

### Contributing Author Papers

- 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**,  
Accepted by Physical Review X [arXiv: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](#) [arXiv:2009.01075](#)
- Chirp mass based glitch identification in long-duration gravitational-wave detection.  
Nirban Bose, Archana Pai, **Koustav Chandra** and V. Gayathri  
[Physical Review D 102, 084034](#) [arXiv:2007.03623](#)

## CONFERENCE PARTICIPATION

### Talks

- 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  
**31<sup>st</sup> 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

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

### 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