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 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

First Author Papers

- 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
  Submitted to Physical Review D arxiv: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 arXiv:2002.10666

Contributing Author Papers

- 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**,
  Submitted to Astronomy & Astrophysics arxiv: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**,
  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
  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