



# Simultaneous Inference of Cosmology and Population of Binary Neutron Stars from Gravitational-Waves

**SOURMENDRA KISHORE ROY**

SUNY at Stony Brook, USA



## ABSTRACT

LIGO-Virgo-Kagra (LVK) Collaboration has detected two confident binary neutron stars up to the third observing run. One of them (GW170817) has an electromagnetic counterpart helping direct estimation of redshift. But most of the expected detections will not have an electromagnetic counterpart, and hence other methods need to be developed to estimate cosmological parameters. In this talk, we will discuss how to estimate redshift from the population distribution of the source frame mass of binary neutron stars. In the first half of the talk, we will deal with a pedagogical set-up to infer both cosmological and population level parameters simultaneously. We will also present a realistic forecast for the current and future observations in LVK. Finally we will end with a remark on the number of events needed to get a sub-percent measurement of the Hubble constant to comment on the existence of Hubble tension.

## VENUE

PAMU Seminar Hall  
A.N. Kolmogorov Building,  
ISI, Kolkata

## DATE & TIME

14th June, 2023  
03:00 PM



*Everyone is  
invited to attend*

Head, PAMU