

INDIAN ASSOCIATION FOR THE CULTIVATION OF SCIENCE
2A&B, Raja S.C. Mullick Road, Jadavpur, Kolkata-700032, India

Seminar Notice

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School of Physical Sciences

Title:	Estimating the cosmological parameters using gravitational-wave observations and their cross-correlation with a galaxy catalog
Speaker:	Ankan Sur, University of Amsterdam, Netherlands
Date:	September 6, 2018 (Thursday)
Time:	3:30 p.m.
Venue:	Physics Seminar Room (C406), 3rd Floor, Centenary Building, IACS
Abstract:	Gravitational waves from GW170817 with its optical counterpart led to the first "standard siren" measurement of the Hubble constant. A direct estimation of luminosity distance to the gravitational-wave source independent of any Cosmic Distance Ladder combined with redshift from the counterpart allowed for such a measurement. Even in the absence of a transient electromagnetic counterpart, one can use the redshift information present in a galaxy catalog, and by statistical cross-correlation, get an estimate of the cosmological parameters from a set of gravitational-wave observations. However, these methods are very sensitive to even tiny systematic effects, and selection effects in particular. We develop a method to correct for such selection effects coming from the finite sensitivity of the detectors and incompleteness of galaxy catalogs and demonstrate the effectiveness of our method in measuring the Hubble constant on a set of simulations.

All are cordially invited to attend the seminar