



Institute Colloquium



S. N. Bose National Centre for Basic Sciences
(An Autonomous Research Institute established under DST, GOI)



13 December 2022



12.00 Noon
at FERMION, SNBNCBS



Webinar Link

YouTube YouTube Link

***Title:* Negativity of Wigner distribution function as a measure of incompatibility**

Abstract:

It is a well-known fact that the negativity of Wigner function -- a phase-space distribution function for states of a continuous-variable (CV) quantum system -- represents non-classicality (or, quantumness) of the state. In this regard, the Wigner function can be considered as a joint (quasi-) probability distribution function of values of the canonically conjugate quadrature observables 'position' and 'momentum'. Thus, negativity of the Wigner function here may also be considered as a tool for reflecting upon the incompatibility of position and momentum observables of the system. This feature also gets reflected when we consider Wigner function-type phase-space distributions for finite dimensional quantum systems where the phase-space can be considered to be either continuous or discrete. Recently, Schwonnek and Werner [*J. Math. Phys.*, vol. 61, pp. 8 (2020)] made an effort to generalize the notion of Wigner's distribution in the case of any given set of observables of a discrete quantum system which shares some of the properties the Wigner function in the case of CV. In the present work, we adopted the method of Schwonnek and Werner to explore quantitatively the relation between incompatibility of qubit POVMs and the amount of negativity of the associated Wigner function. In this approach, the state of the system doesn't play the primary role, rather it is the set of POVMs that is important..

Speaker:

Professor Sibasish Ghosh

Professor at The Institute of Mathematical Sciences, Chennai.

Professor Ghosh is well known for his research in Quantum Information and Quantum Optics.

