



Department: Department of Physical Sciences (DPS)

Research interests: Chaos and quantum scars in interacting quantum systems, Ultracold quantum gases, Non-equilibrium dynamics

Achievements: Best MS thesis award for "*Generalized spin boson model and its application to dissipative Bose-Josephson junction (2019)*" under the supervision of Dr. Subhasis Sinha

List of Publications:

- 1.) Sudip Sinha, S. Sinha, "*Dissipative Bose-Josephson junction coupled to bosonic baths*", Phys. Rev. E **100**, 032115 (2019).
- 2.) Sudip Sinha, S. Sinha, "*Chaos and quantum scars in Bose-Josephson junction coupled to a bosonic mode*", Phys. Rev. Lett. **125**, 134101 (2020).
- 3.) D. Mondal, Sudip Sinha, and S. Sinha, "*Chaos and quantum scars in a coupled top model*", Phys. Rev. E **102**, 020101(R) (2020).
- 4.) Sudip Sinha, S. Ray and S. Sinha, "*Fingerprint of chaos and quantum scars in kicked Dicke model: An out-of-time-order correlator study*", J. Phys.: Condens. Matter **33**, 174005 (2021).
- 5.) D. Mondal, Sudip Sinha, and S. Sinha, "*Dynamical route to ergodicity and quantum scarring in kicked coupled top*", Phys. Rev. E **104**, 024217 (2021).
- 6.) K. Mukhuti, Sudip Sinha, S. Sinha and B. Bansal, "*Dissipation induced symmetry breaking: Emphanitic transitions in lead- and tin- containing chalcogenides and halide perovskites*", Appl. Phys. Lett. **118**, 162111 (2021) (Editor's pick).

- 7.) D. Mondal, Sudip Sinha, and S. Sinha, "*Quantum transitions, ergodicity and quantum scars in coupled top model*", Phys. Rev. E **105**, 014130 (2022).
- 8.) D. Mondal, Sudip Sinha, S. Ray, J. Kroha, and S. Sinha, "*Classical route to ergodicity and scarring phenomena in a two component Bose-Josephson junction*", Phys. Rev. A **106**, 043321 (2022).
- 9.) M. Malakar, Sudip Sinha, and S. Sinha, "*Finite temperature phases and excitations of bosons on a square lattice: A cluster mean field study*", J. Stat. Mech. **2023**, 043104 (2023).
- 10.) Sudip Sinha, S. Biswas, L. Santos, and S. Sinha, "*Impurities in quasi-one-dimensional droplets of binary Bose mixtures*", Phys. Rev. A **108**, 023311 (2023).
- 11.) M. Malakar, Sudip Sinha, and S. Sinha, "*Formation of paired phases of bosons and their excitations in square lattice*", Phys. Rev. B **108**, 043104 (2023).
- 12.) Sudip Sinha, S. ray, and S. Sinha, "*Classical route to ergodicity and scarring in collective quantum systems*", J. Phys. Condens. Matter **36**, 163001 (2024). [Topical Review]