



## ICTS Condensed Matter Seminar (HYBRID)

**Title** : Information-theoretic aspects of scrambling and chaos

**Speaker** : Namit Anand (NASA Quantum AI Lab)

**Date** : Monday, 08<sup>th</sup> January 2024

**Time** : 04:00 PM (IST)

**Abstract** : The goal of this seminar is to provide an overview of our recent results. We will discuss connections between operator entanglement of the dynamics, OTOCs, and entropy production as introduced in [1]. Then we will discuss how to 'disentangle' contributions from decoherence vs. scrambling for open quantum systems [2]. How finite temperature 'regularized' OTOCs are related to spectral form factors and the entanglement of the time-evolved thermofield double state [3]. An intermezzo about the connection between the quantum coherence-generating power of a unitary and OTOCs of random diagonal unitaries [4]. A quick overview of an operator algebraic framework for scrambling that is useful for both closed and open quantum systems [5]. And finally how OTOCs behave in local non-Hermitian Hamiltonians (effective models for measurement-induced phase transitions) [6].

[1] <https://journals.aps.org/prl/abstract/10.1103/PhysRevLett.126.030601>

[2] <https://journals.aps.org/prl/abstract/10.1103/PhysRevA.103.062214>

[3] <https://quantum-journal.org/papers/q-2022-06-27-746/>

[4] <https://journals.aps.org/prresearch/abstract/10.1103/PhysRevResearch.3.023214>

[5] <https://journals.aps.org/prl/abstract/10.1103/PhysRevA.107.042217>

[6] <https://journals.aps.org/prb/abstract/10.1103/PhysRevB.108.134305>

**Venue** : **Offline:** Emmy Noether Seminar Room (ICTS)

**Online:** Please click on the below link to join the seminar

<https://icts-res-in.zoom.us/j/98224995629?pwd=eUpZblBWbm9FTHNDYWxvcnkvNHRuZz09>

Meeting ID: 982 2499 5629

Passcode: 614447