



## **ICTS Statistical Physics and Condensed Matter Seminar**

**Title** : Symmetries as Algebras: From Hydrodynamics to Non-Universality

**Speaker** : Sanjay Moudgalya (Technische Universität München, Munich, Germany)

**Date** : Friday, 23 August 2024

**Time** : 02:00 PM (IST)

**Abstract** : The study of symmetry is central to many areas of physics. While most symmetries conventionally studied are examples of on-site unitary symmetries which have a nice group structures, recent discoveries of dynamical phenomena such as weak ergodicity breaking have called for a generalization of the notion of symmetry, forcing us to think of them as commutant algebras. In this talk, I discuss how this algebra framework sheds light on various physical aspects, focusing on two of them. First, it provides a concrete way to understand hydrodynamic modes corresponding to conventional or unconventional symmetries, which affect the correlation functions and entanglement behavior of systems with those symmetries. Second, it yields insights on the non-universality of symmetric unitary circuits, i.e., the result that no set of symmetric local unitaries can generate the set of all globally symmetric unitaries, and shows their connection to superoperator symmetries.

**Venue** : Emmy Noether Seminar Room

Zoom Link: <https://icts-res-in.zoom.us/j/92222922058?pwd=auAfJblxDQot51WQnPlnhsjhm5hl4ay.1>

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