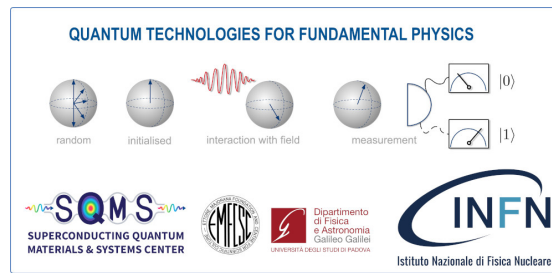Contribution ID: **70**   Type: **not specified**

Operational Quantum Mereology

Wednesday, 6 September 2023 15:00 (25 minutes)

In this talk I will outline a novel approach to quantum mereology based on minimal information scrambling. Generalized quantum subsystems are defined by pairs of von Neumann algebras and their scrambling in terms of an Algebraic Out of Time Order Correlation (A-OTOC) function. The short time expansion of the A-OTOC allows one to define a notion of Gaussian Scrambling rate. The latter has a simple geometrical interpretation, and its local minima provide an operational criterion for the selection of emergent quantum subsystems.

References:
P. Zanardi, E. Dallas, S. Lloyd, Operational Quantum Mereology and Minimal Scrambling, arXiv:2212.14340

Presenter: ZANARDI, Paolo (University of Southern California, Los Angeles, USA)

Session Classification: Quantum Computation and Simulation