

中央大學物理學系

Department of Physics, National Central University



Colloquium

Tripartite Entanglement, Non- Locality, and Connected Correlators

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Date: 2025/10/07 (Tue)

Venue: S4-625

Time: 14:00-16:00

Abstract :

Entanglement and non-locality coincide in two-qubit pure states, but this connection breaks down for three-qubit and mixed states. I will present recent work showing that Bell-type violations are not universal indicators of entanglement. By utilizing a generalized correlation tensor known as the R-matrix, we can classify three-qubit entanglement and understand the reasons behind the failure of standard inequalities. For mixed states, we introduce a novel tool—the connected correlator—which eliminates classical contributions and reestablishes a direct connection between measurable correlations and genuine quantum entanglement. These methods avoid full state tomography and are well-suited for current multi-qubit platforms.