Contribution ID : **4** Type : **not specified**

Entanglement features from intermediate heavy particle in scattering

Monday, 29 September 2025 09:30 (30)

The amount of information propagated by an intermediate heavy particle exhibits characteristic features in inelastic scatterings with $n \geq 3$ final particles. As the total energy increases, the entanglement entropy, between its decay products and other final particles, exhibits a universal sharp dip, suppressed by its small decay rate. This indicates an entanglement suppression from a low-energy effective theory to a channel dominated by an on-shell heavy particle. As demonstrations of these entanglement features, we study concrete models of $2 \to 3$ and $2 \to 4$ scatterings, which shed light on the entanglement structure beyond the area law derived for $2 \to 2$ scattering. In practice, these features may be probed by suitably marginalizing the phase-space distribution of final particles.
References: 2507.03555

Primary author(s) : Dr SOU, Chon Man (Tsinghua University); Mr ZHANG, Xingkai (The Hong Kong University of Science and Technology); Prof. WANG, Yi (The Hong Kong University of Science and Technology)

Presenter(s) : Dr SOU, Chon Man (Tsinghua University)

Session Classification : Plenary