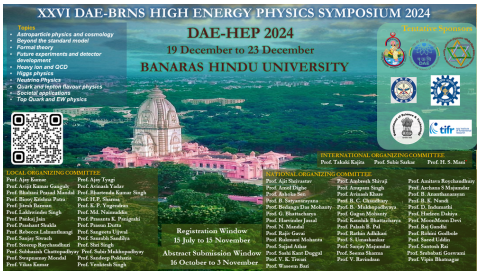

Contribution ID: **28** Type: **Oral**

An equivalence of three butterflies in Lifshitz background

In this work, we investigate two salient chaotic features, namely Lyapunov exponent and butterfly velocity, in the context of an asymptotically Lifshitz black hole background with an arbitrary critical exponent. These features are computed using three methods: entanglement wedge method, out-of-time-ordered correlator computation and pole-skipping. We present a comparative study of the aforementioned features where all of these methods yield exactly similar results for the butterfly velocity and Lyapunov exponent. This establishes an equivalence between all three methods for probing chaos in the chosen gravity background. Furthermore, we evaluate the chaos at the classical level by computing the eikonal phase and Lyapunov exponent from the bulk gravity. These quantities emerge as nontrivial functions of the anisotropy index. By examining the classical eikonal phase, we uncover different scattering scenarios in the near-horizon and near-boundary regimes. We also discuss potential limitations regarding the choice of the turning point of the null geodesic in our approach.

Field of contribution

Theory

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Track Classification: Formal theory