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# Contributed Talk - Information Scrambling with Higher–Form Fields - Abhishek Chowdhury, IIT Bhubaneswar

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The late time behaviour of OTOCs involving generic non–conserved local operators shows exponential decay in chaotic many-body systems. However, it has been recently observed that the OTOC involving the U (1) conserved current for a gauge field varies diffusively at late times for specific holographic theories. The present work generalises this observation to conserved currents corresponding to higher–form symmetries belonging to a broader class of generalised symmetries, generalised by computing the late-time behaviour of OTOCs involving U (1) current operators in five-dimensional AdS-Schwarzschild black hole geometry for the 2–form antisymmetric B-fields. The bulk solution for the B-field exhibits logarithmic divergences near the asymptotic AdS boundary, which can be regularised by introducing a regularised double trace deformation in the boundary CFT. Finally, we consider the more general case with antisymmetric p–form fields in arbitrary dimensions. In the scattering approach, the boundary OTOC can be written as an inner product between asymptotic 'in'and 'out'states, equivalent to computing the inner product between two bulk fields with and without a shockwave background. We observe that the late-time OTOCs have power-law tails, which seems to be a universal feature of the higher–form fields with U (1) charge conservation.

Session Chair : Nirmalya Kajuri