Contribution ID: **36**   Type: **not specified**

Momentum/Complexity Duality and the Black Hole Interior

Wednesday 15 January 2020 18:15 (15 minutes)

Notions of operator complexity characterize how fast information scrambles in a many body quantum system. For holographic systems, it has recently been conjectured that the 'size' of an operator can be interpreted in terms of the mechanical momentum of an effective particle in the bulk. In this talk, I will first introduce a different notion of operator complexity for holographic systems by using the VC prescription. I will then show that an exact formulation of the momentum/complexity duality holds for the particular case of spherical thin shell operators. In this picture, the late time linear growth of the operator complexity is due to an exponential time freeze in the black hole interior. I will comment on the precise duality, and on possible generalizations.

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Session Classification: short talk