Contribution ID: **48** Type: **Gong Show talk + Poster**

Is action complexity better for dS space in JT gravity?

Holographic complexity is supposed to capture the evolution of spacetime. In two-dimensional de Sitter (dS), volume complexity remains O(1) up to a critical time, after which it suddenly diverges. On the other hand, in (d>2)-dimensional dS, complexity becomes very large even before the critical time. In Jackiw-Teitelboim (JT) gravity, taking into account the dilaton, the same behavior is expected for complexity in two-dimensional dS. We show that this expectation is met by action complexity, which we explicitly compute by performing half reduction from three-dimensional dS. In addition, we propose an appropriate Weyl field-redefinition such that volume avoids the discontinuous jump in time evolution. Since action complexity directly takes into account the dilaton and does not suffer the Weyl-field redefinition ambiguity which affects volume complexity, we argue that action is better than volume for dS in JT gravity.

Primary author: ZENONI, Nicolò (Department of Physics, Osaka University)