



Contribution ID: 18

Type: Talk

## Holographic renormalized Entanglement and entropic $c$ -function

*Tuesday, 18 June 2024 17:30 (20 minutes)*

We compute holographic entanglement entropy (EE) and the renormalized EE in AdS solitons with gauge potential for various dimensions. The renormalized EE is a cutoff-independent universal component of EE. Via Kaluza-Klein compactification of  $S^1$  and considering the low-energy regime, we deduce the  $(d - 1)$ -dimensional renormalized EE from the odd-dimensional counterpart. This corresponds to the shrinking circle of AdS solitons, probed at large  $l$ . The minimal surface transitions from disk to cylinder dominance as  $l$  increases. The quantum phase transition occurs at a critical subregion size, with renormalized EE showing non-monotonic behavior around this size. Across dimensions, massive modes decouple at lower energy, while degrees of freedom with Wilson lines contribute at smaller energy scales.

**Primary author:** FUJITA, Mitsutoshi (University of South China)

**Co-authors:** Mr HE, Song (Jilin University); Mr SUN, Yuan (Central South University); Mr ZHANG, Jun (University of Alabama)

**Presenter:** FUJITA, Mitsutoshi (University of South China)

**Session Classification:** Session 4