Contribution ID : **176** Type : **not specified**

On $AdS_3/ICFT_2$ with a dynamical scalar field located on the brane

Tuesday, 3 December 2024 17:50 (20)

We exploit the holographic duality to study the system of a one-dimensional interface contacting two semi-infinite two-dimensional CFTs. Central to our investigation is the introduction of a dynamical scalar field located on the bulk interface brane which breaks the scaling symmetry of the dual interface field theory, along with its consequential backreaction on the system. We define an interface entropy from holographic entanglement entropy, to construct a g-function. At zero temperature we construct several illustrative examples and consistently observe that the g-theorem is always satisfied. These examples also reveal distinct features of the interface entropy that are intricately linked to the scalar potential profiles. At finite temperature we find that the dynamical scalar field enables the bulk theory to have new configurations which would be infeasible solely with a tension term on the interface brane.

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Session Classification : Day 4: Parallel session III