

## NEW PERSPECTIVES IN CONFORMAL FIELD THEORY AND GRAVITY

HELMHOLTZ

26 - 29 September 2023 DESY Hamburg, Germany



Contribution ID: 286

Type: **not specified**

## On the Boundary Conformal Field Theory Approach to Symmetry-Resolved Entanglement

*Thursday 28 September 2023 16:44 (18 minutes)*

We study the symmetry resolution of the entanglement entropy of an interval in two-dimensional conformal field theories (CFTs), by studying the decomposition of the partition function into charge sectors of the respective symmetry in the presence of boundary conditions at the entangling points. Symmetry resolution provides a more refined entanglement measure and can therefore provide more information about the nature of quantum states in QFT. We demonstrate that the decomposition already provides the symmetry resolution of the entanglement spectrum of the corresponding bipartition. Considering the various terms of the partition function associated with the same charge sector the symmetry-resolved Rényi entropies can be derived to all orders in the UV cutoff expansion without the need to compute the charged moments. We apply this idea to the theory of a free massless boson with  $U(1)$ ,  $\mathbb{R}$  and  $\mathbb{Z}_2$  symmetry. We find equipartition in the  $U(1)$  and  $\mathbb{R}$  cases to all orders in the cutoff expansion.

### Summary

**Primary authors:** NORTHE, Christian; DI GIULIO, Giuseppe; SCHEPPACH, Henri (Julius-Maximilians-Universität Würzburg); MEYER, René; ZHAO, Suting

**Presenter:** SCHEPPACH, Henri (Julius-Maximilians-Universität Würzburg)

**Session Classification:** Parallel Session Thursday: Strings / Mathematics Physics II

**Track Classification:** Strings & Mathematical Physics