**Eurostrings 2024** 



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## **Rényi entropies in the** $n \rightarrow 0$ **limit, entanglement temperatures and holography**

Friday 6 September 2024 16:30 (30 minutes)

In this talk, I will introduce the notion of entanglement temperatures in QFT, a generalization of the Unruh temperatures valid for states reduced onto arbitrary spatial regions. The entanglement temperatures encode the high energy behavior of the state around a point and are determined by the solutions of an Eikonal problem in Euclidean space. I will show that for theories with a UV fixed point, the entanglement temperatures determine the state with a large modular temperature. In particular, I will derive a formula that connects the Rényi entropy in the small Rényi parameter limit and the entanglement temperatures.

In two dimensions, the entanglement temperatures are universal, and so are the associated states. I will show that this fact in conjunction with holography leads to a simple description of the holographic Renyi entropies in the small Rényi parameter. I will comment on the generalization to arbitrary dimension, as well as, open questions and future directions.

## Link to publication (if applicable)

https://journals.aps.org/prd/abstract/10.1103/PhysRevD.108.105009

Author: AGON, Cesar

**Co-authors:** Mr CASINI, Horacio (Instituto Balseiro, Centro Atomico Bariloche); Mr MARTINEZ, Pedro (Instituto Balseiro, Centro Atomico Bariloche)

Presenter: AGON, Cesar

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