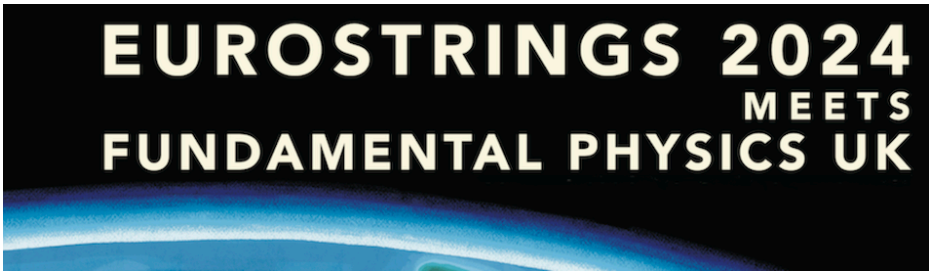

Contribution ID: **141** Type: **Talk in parallel session**

Semiclassical black hole microstates

Thursday 5 September 2024 14:30 (20 minutes)

We study infinite families of black hole microstates consisting of wormholes and shells of matter. They are orthogonal at leading order in the saddle point approximation of the Euclidean gravitational path integral, suggesting a dramatic overcounting of the dimension of the microcanonical subspace. However, wormhole contributions in higher moments of the overlaps reveal small off-diagonal components. This non-orthogonality reduces the (naively infinite) dimension of the space spanned by these states to the expected result: the exponential of the Bekenstein-Hawking entropy. In addition, the appearance of null states can be leveraged to provide evidence of factorization of the bulk Hilbert space of gravity with two asymptotically AdS boundaries at the semiclassical level, generalizing previous results in JT gravity to higher dimensions.

Link to publication (if applicable)

Author: Mr HERNANDEZ, Juan (Vrije Universiteit Brussel)

Presenter: Mr HERNANDEZ, Juan (Vrije Universiteit Brussel)

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