



Department of
Theoretical Physics

THE QUANTUM SPACETIME SEMINAR SERIES

Microscopic Black Hole Entropy in AdS5 (Zoom Seminar)

Francesco Benini

(SISSA, Italy)

Date: July 13, 2020

Time: 3.30 pm IST

Zoom link shall be shared separately



AdS/CFT provides a consistent non-perturbative definition of quantum gravity in asymptotically AdS space. Black holes should correspond to ensembles of states in the boundary field theory. By analyzing the superconformal index of 4d $N=4$ $SU(N)$ Super-Yang-Mills, with the help of a new Bethe Ansatz type formula, we are able to exactly reproduce the Bekenstein-Hawking entropy of BPS black holes in $AdS_5 \times S^5$. The large N limit exhibits many competing contributions and Stokes phenomena, hinting at new physics. The computation can be extended to more general Sasaki-Einstein internal manifolds, although BPS black holes in that context have not been constructed. I will highlight how to construct new horizon geometries, and perform some checks for the conifold.