

# SEMPARIS – Séminaires en région parisienne

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## Séminaire de matrices, cordes et géométries aléatoires

**Mercredi 26 Avril 2017, 14 :15**  
IPHT, Salle Claude Itzykson, Bât. 774  
Domaines : hep-th

Titre : *Black hole microstates in  $AdS_4$  and  $AdS_5$  from supersymmetric partition functions*

Orateur : **Kiril Hristov ( INRNE, Sofiya )**

Résumé : *This talk addresses the problem of counting the microstates of supersymmetric asymptotically AdS black holes in terms of a holographically dual field theory. We focus on a particular BPS class of  $AdS_2 \times S^2$  near-horizon geometry in  $N=2$  gauged supergravity relevant both for  $AdS_4$  and  $AdS_5$  black holes. We consider in the large  $N$  limit the topologically twisted index of the ABJM theory and the partition function of  $N=4$  SYM and show that they correctly reproduce the Bekenstein-Hawking entropy of the  $AdS_4$  and  $AdS_5$  black holes, respectively. An extremization of the partition functions with respect to a set of chemical potentials is required. We interpret it as the selection of the exact  $R$ -symmetry of the superconformal quantum mechanics describing the horizon of the black holes.*

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