

# SEMPARIS – Séminaires en région parisienne

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## Séminaire de matrices, cordes et géométries aléatoires

**Mercredi 14 Février 2018, 14 :00**  
IPHT, Salle Claude Itzykson, Bât. 774  
Domaines : hep-th

Titre : *On relative entropy and distinguishability of black hole microstates*

Orateur : **Andrea Puhm ( École Polytechnique )**

Résumé : *Relative entropy is among the most powerful tools available for characterizing the distinguishability of two quantum states, and has recently found broad application in holography. A challenging question in the context of the information paradox is how to distinguish black hole microstates without access to the entire spacetime. Inspired by the recent work of Bao and Ooguri (BO), we study the distinguishability of black hole microstates from the thermal state as captured by the average of their relative entropies known as Holevo information. Under the assumption that the vacuum conformal block dominates the entropy calculation, BO find that the average relative entropy vanishes on spatial regions smaller than half the size of the CFT. However, vacuum block dominance fails for some microstates of the  $M = 0$  BTZ black hole. We show that this renders the average relative entropy non-zero even on infinitesimal intervals at leading order in the central charge.*

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