

Séminaire de matrices, cordes et géométries aléatoires

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The BPS limit of rotating AdS black hole thermodynamics

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In the last couple of years it has been proposed that the Bekenstein-Hawking entropy of rotating AdS_d black holes ($4 \leq d \leq 7$) can be reproduced by extremizing the Legendre transform of a homogeneous function of chemical potentials subject to a complex constraint. In this seminar, I will provide a physical interpretation of these extremization principles, showing that in each dimension the entropy function coincides with the on-shell supergravity action when the BPS chemical potentials are obtained by taking a specific BPS limit of black hole thermodynamics. To perform the limit, one starts from finite temperature and reaches the extremal BPS black hole along a supersymmetric trajectory in the space of complexified solutions. We thus provide a generalization of the BPS limit proposed in [arXiv:1810.11442] to multicharge black holes and to every dimension d .
