Type: Seminar

Swapnamay Mondal - Supersymmetric black holes and $T\bar{T}$ deformation

Thursday 7 September 2023 16:00 (40 minutes)

The entropy of supersymmetric black holes in string theory compactifications can be related to that of a Dor M-brane system, which in many cases can be further reduced to a two-dimensional conformal field theory (2d CFT). For black holes in M-theory, this relation involves a decoupling limit where the black hole mass diverges. We suggest that moving away from this limit corresponds to a specific irrelevant perturbation of the 2d CFT, namely the supersymmetric completion of the $T\bar{T}$ deformation. We demonstrate that the black hole mass matches precisely with the $T\bar{T}$ deformed energy levels, upon identifying the $T\bar{T}$ deformation parameter with the inverse of the leading term of the black hole mass. We discuss various implications of this novel realization of the $T\bar{T}$ deformation, including a Hagedorn temperature for wrapped M5-branes, and potential change of degeneracies in the deformed theory.

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