

Fermionically Generated Superstrata

Wednesday, 19 December 2018 16:45 (20 minutes)

The aim of the talk is to present the construction of a new family of smooth horizonless solutions of supergravity that have the same charges as the supersymmetric D1-D5-P black hole. We will begin with a brief review of the Fuzzball proposal for black holes, which states that at the length scale of the horizon a new, fuzzy, phase takes over, allowing outside observers to distinguish between different microstates of the black hole. We will then focus on the three charge supersymmetric D1-D5-P black hole and review some of its microstate geometries. We then present a method of obtaining a new family of solutions using supersymmetry generators. The motivation behind this construction is coming from the dual CFT multiplet structure, where these fermionic generators are used to create new linearly independent states in the theory. On the gravity side the geometries dual to these new states are generated by the Killing spinors of $\text{AdS}_3 \times S^3 \times T^4$. Hence we present the explicit form of these spinors and use them to construct new solutions to the supergravity equations. Finally we present these new solutions and show that they are simpler than the ones previously known with having a fewer number of excited fields.

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