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Multicentered Microstates and Large Quantum Fluctuations

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We quantize a family of smooth multicentered supergravity solutions generating (micro)states of a large supersymmetric black hole in five dimensions. Certain special states are found to suffer from unexpected, macroscopically large quantum fluctuations in the near horizon region of the putative black hole. This breakdown in effective field theory near the horizon may be relevant in resolving black hole paradoxes and hence warrants further study. We report on on-going attempts to re-introducing “stringy” degrees of freedom in the near horizon region, continuing these solutions (by virtue of a non-renormalization theorem) to a weakly coupled D-brane quantum mechanics, where additional degrees of freedom, unapparent in supergravity, may be more tractably studied.

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