

BPS Gravitational Solitons in Anti-de Sitter Spacetimes

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Gravitational solitons are globally stationary, geodesically complete spacetimes with positive energy. These event-horizonless geometries do not exist in the electrovacuum by the classic Lichnerowicz Theorem. However, gravitational solitons exist when there are non-Abelian gauge fields in higher dimensions. In this talk, I will present a new class of supersymmetric asymptotically globally Anti-de Sitter gravitational solitons. I will then show that they contain evanescent ergosurfaces, a timelike hypersurface where the timelike Killing vector field becomes null. The presence of this hypersurface strongly suggests nonlinear instability due to the stable trapping phenomena. I will present an analytical argument for the derivation of this nonlinear instability. This is joint work with Dr. Hari K. Kunduri.

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