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Black holes in gravitational instanton spacetimes

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Isolated gravitational systems, such as stationary vacuum black holes, are described in general relativity by spacetimes whose spatial hypersurfaces asymptotically approach flat Euclidean space. The geometric and physical invariants characterizing these solutions are very well understood. In five dimensions, one can also consider vacuum solutions whose spatial slices asymptotically approach a gravitational instanton geometry, such as the Eguchi-Hanson and Euclidean Schwarzschild instantons. The asymptotic three-sphere at infinity is replaced with a (possibly trivial) circle bundle over a two-sphere. I will discuss invariants and black hole mechanics for families of solutions of this type obtained by Chen and Teo.

Keyword-1

black holes

Keyword-2

general relativity

Keyword-3

geometry

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