February 28th, 2019

Supersymmetric rotating black holes in gauged supergravity and string theory

Tomás Ortín [1] *and Alejandro Ruipérez* [1,2]

[1] *Instituto de Física Teórica UAM/CSIC,*
C/ Nicolás Cabrera, 13–15, C.U. Cantoblanco, E-28049 Madrid, Spain

[2] *Instituut voor Theoretische Fysica,*
KU Leuven, Celestijnenlaan 200D, B-3001 Leuven, Belgium

Abstract

We will present a new class of supersymmetric solutions of 5- and 4-dimensional gauged supergravity describing asymptotically-flat rotating black holes in 5 and 4 dimensions, respectively. The novel ingredient of our solutions is the addition of SU(2) dyonic instantons to the well-known 3- and 4-charge extremal black holes studied in the nineties in the context of toroidally compactified heterotic string theory. It is precisely due to the interactions between electric and magnetic non-Abelian sources that the black holes have, in general, non-zero angular momenta. We will show that our solutions can be embedded in heterotic string theory when first-order α'-corrections are taken into account.