

BPS black holes in four dimensions

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In four dimensions, Einstein-Maxwell-dilaton type theories with Weyl square interactions, when combined with $N=2$ supersymmetry, are theories that are encoded in a holomorphic function F .

This function F also determines Wald's entropy of BPS black holes in these theories. A successful derivation of the entropy through a counting of black hole microstates, which in string theory is often expressed in terms of modular forms, requires detailed knowledge about F .

We report on recent progress in obtaining exact results for F in a specific string model, by means of electric-magnetic duality. Based on this, we propose an approximate microstate counting formula for dyonic BPS black holes in this model.