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Dilaton moduli as redundant parameters

Abstract

Black holes as solutions to gravity theories, are generically identified by a set of parameters. Some of these parameters are associated with black hole physical conserved charges, like ADM charges. There can also be some "redundant parameters." I will talk about two necessary conditions for a parameter to be physical. As an interesting application, dilaton moduli are shown to be redundant parameters for black hole solutions to Einstein-Maxwell-(Axion)-Dilaton theories. This result is in contrast with modification of the first law due to scalar charges.