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Quasinormal modes of p -forms in spherical black holes

We study the quasinormal modes of p -form fields in spherical black holes in D -dimensions. Using the spherical symmetry of the black holes and gauge symmetry, we show the p -form field can be expressed in terms of the coexact p -form and the coexact $(p - 1)$ -form on the sphere S^{D-2} . These variables allow us to find the master equations. By utilizing the S -deformation method, we explicitly show the stability of p -form fields in the spherical black hole spacetime. Moreover, using the WKB approximation, we calculate the quasinormal modes of the p -form fields in $D(\leq 10)$ -dimensions.

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