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Scalar hairy black holes in four dimensions are unstable

Thursday 11 January 2018 16:30 (20 minutes)

We present a numerical analysis of the stability properties of the black holes with scalar hair constructed by Herdeiro and Radu. We prove the existence of a novel gauge where the scalar field perturbations decouple from the metric perturbations, and analyse the resulting quasinormal mode spectrum. We find unstable modes with characteristic growth rates which for uniformly small hair are almost identical to those of a massive scalar field on a fixed Kerr background, whereas for larger amplitudes of the scalar cloud can be up to a few times larger than in Kerr.

What would be the preferred length of your talk?

20 minutes + questions

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