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## **Instability of a RNAdS black hole under perturbations of a scalar field coupled to the Einstein tensor**

*Monday, September 23, 2019 4:00 PM (20 minutes)*

We study the instability of a Reissner-Nordström-AdS (RNAdS) black hole under perturbations of a massive scalar field coupled to Einstein tensor. Calculating the potential of the scalar perturbations we find that as the strength of the coupling of the scalar to Einstein tensor is increasing, the potential develops a negative well outside the black hole horizon, indicating an instability of the background RNAdS. We then investigate the effect of this coupling on the quasinormal modes. We find that there exists a critical value of the coupling that triggers the instability of the RNAdS. We also find that as the charge of the RNAdS is increased towards its extremal value, the critical value of the derivative coupling is decreased.

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