Contribution ID: **6** Type: **Invited talk in a parallel session**

Calculating quasinormal modes of extremal and non-extremal Reissner-Nordström black holes with the continued fraction method

Friday, 12 July 2024 17:20 (20 minutes)

We use the numerical continued fraction method to investigate quasinormal mode spectra of extremal and non-extremal Reissner-Nordström black holes in the low and intermediate damping regions. In the extremal case, we develop techniques that significantly expand the calculated spectrum from what had previously appeared in the literature. This allows us to determine the asymptotic behavior of the extremal spectrum in the high damping limit, where there are conflicting published results. Our investigation further supports the idea that the extremal limit of the non-extremal case, where the charge approaches the mass of the black hole in natural units, leads to the same vibrational spectrum as in the extremal case despite the qualitative differences in their topology. In addition, we numerically explore the quasinormal mode spectrum for a Reissner-Nordström black hole in the small charge limit.

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