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## **FIELDS IN A LEAKING BOX: SCALAR CASE AROUND BLACK HOLES**

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### **Resumo**

The study of fields propagating on black hole spacetimes provide important tools towards a better understanding of the physical properties of matter and astrophysical phenomena. Waves impinging upon a black hole can be used to study scattering patterns, accretion (absorption), and superradiance by this object and in addition insights for some quantum theory of gravity. On the other hand, the study of the stability of these objects also leads to quasinormal modes and bound states which reveal the field's evolution properties, being associated with spacetime, and are especially related to gravitational waves. We present features of massive scalar fields in black hole spacetimes, in particular the Kerr-Newman-de Sitter family, analyzing superradiance and mode stability. We investigate, in particular, the existence of quasibound states.

**Palavras chave:** Black hole, massive field, quasibound states.