

## Dynamics of scalar fields around black holes

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Scalar fields have been proposed as possible candidates for the dark matter component of the universe and are one of the simplest types of matter often considered by physicists. Furthermore, there is observational evidence that fundamental scalar fields exist in nature by virtue of the discovery of a scalar particle at the Large Hadron Collider. Moreover, there are astrophysical scenarios in which black holes may be surrounded by scalar fields. In the vicinities of super massive black holes for instance, scalar fields give rise to long lived, or even unstable, configurations which extract angular momentum from the black hole producing instabilities or evolve non linearly over time and produce hairy black holes. In this talk I will revisit some of the properties of the dynamics of scalar fields around black holes which include long live configurations and superradiant scattering.

## References

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