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Floating orbits and energy extraction from magnetized Kerr black holes

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We look at the effect of including radiation in the dynamics of charged particles in circular orbit around weakly magnetized Kerr black holes. The magnetic field leads to the existence of very low frequency circular orbits in the equatorial plane. The radiation emitted by particles in these orbits can be amplified through superradiance. We show that, as a result of this amplification, particles can be frozen in floating orbits and even extract energy from the BH.

Author: SIEIRO DOS SANTOS, João (Instituto Superior Técnico, CENTRA)

Presenter: SIEIRO DOS SANTOS, João (Instituto Superior Técnico, CENTRA)