



Superradiance and quasibound states in a static regular black hole spacetime

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We show that a charged, massive scalar field around an electrically-charged Ayon-Beato-García regular black hole has a spectrum of quasibound states that (in a certain parameter regime) grow exponentially with time, due to black hole superradiance. Superradiant quasibound states are made possible by the enhancement of the electrostatic potential at the horizon in nonlinear electrodynamics. For its turn, the Reissner-Nordstrom black hole possess such superradiant quasibound states only in the presence of a surrounding mirror. We obtain the spectrum for a range of multipoles across the parameter space, and we find the fastest growth rate in the monopole mode.