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The stability of charged black holes

Black holes solutions are parametrized by their mass, spin and charge. In this talk, I will motivate why the charge of black holes adds interesting dynamics to solutions of the Einstein equation thanks to the interaction between gravitational and electromagnetic radiations. Such radiations are solutions of a system of coupled wave equations with a symmetric structure which allows to define a combined energy-momentum tensor for the system. Finally, I will show how this physical-space approach is resolute in the most general case of Kerr-Newman black hole, where the interaction between the radiations prevents the separability in modes.