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L. Annulli: Spin-induced scalarization and magnetic fields

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In the presence of certain non-minimal couplings between a scalar field and the Gauss-Bonnet curvature invariant, Kerr black holes can scalarize, as long as they are spinning fast enough. This provides a distinctive violation of the Kerr hypothesis, occurring only for some high spin range. Motivated by the fact that self-gravitating magnetic fields, by themselves, can promote "spin-induced"scalarization, in this talk I will assess if strong magnetic fields, that may exist in the vicinity of astrophysical black holes, could facilitate this distinctive effect. A geometric interpretation for the obtained result is suggested, in terms of the effects of rotation vs. magnetic fields on the horizon geometry.

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