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Title: Close limit approximation for modified gravity: Scalar instabilities in binary black hole spacetimes

Abstract: The ability to model the evolution of compact binaries from the inspiral to coalescence is central to gravitational wave astronomy. Current waveform catalogues are built from vacuum binary black hole models, by evolving Einstein equations numerically and complementing them with knowledge from slow-motion expansions. Much less is known about the coalescence process in the presence of matter, or in theories other than General Relativity. In this talk, I take into account a black hole binary in theories including non-minimally coupled scalar fields, where static black holes are unstable to tachyonic instability, depending on the value of their mass. Hence, I will use the Close Limit Approximation as a tool to obtain a qualitative idea of the effect of the merger of two black holes on surrounding scalar fields in Einstein-scalar-Gauss-Bonnet gravity.