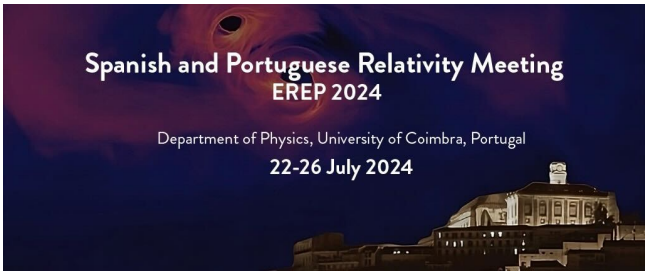

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Propagation and emission of gravitational waves in the weak-field limit within the Palatini formalism

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In the era of gravitational waves physics, when detections of wave fronts are increasing in number, sensitivity, frequencies and distances, gravitational physics has entered a period of maximum activity and brilliance. This has opened a new window where General Relativity can be challenged in both weak and strong-field regimes. For this reason, modified theories of gravity have been proposed, such as f(R) theories, which consider a gravitational action that depends on a function of the scalar curvature f(R), rather than the scalar curvature R itself, or the Palatini formalism, in which the affine connection is (a-priori) assumed to be independent to the metric.

In this talk, I will focus on the analysis of gravitational waves propagation and emission in the weak-field regime for gravitational f(R) theories within the Palatini formalism. Our results show that gravitational waves propagation in vacuum matches General Relativity predictions as well as the functional form of the multipolar expansion when considering weak sources. However, a rescaling of the gravitational constant arises, which affects the energy radiated by the gravitational waves emission.

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