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Effects of massive spin-2 fields on gravitational wave propagation

by J. A. R. Cembranos, Á. Cendal and H. Villarrubia-Rojo

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Plaza de las Ciencias, 1 28040 Madrid, Spain

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Abstract

Massive spin-2 fields in addition to the standard massless graviton arise naturally in extensions of General Relativity, such as massive bigravity or models with extra dimensions. This work explores the observational signatures of these fields on the propagation of gravitational waves. Adopting a phenomenological framework consistent with such theories, we derive an analytical transfer function in the ultrarelativistic limit and establish detectability bounds. Finally, we provide forecasts for the accessible parameter space using current and future gravitational wave detectors.

