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U. Sperhake: The Stochastic background from core collapse supernovae in massive scalar-tensor gravity

Tuesday 20 December 2022 12:30 (15 minutes)

In this talk, we model the gravitational collapse of stars in massive scalar-tensor gravity. In this theory, the two tensorial gravitational-wave polarization modes are complemented by a massive breathing mode. This latter mode is triggered by the spontaneous scalarization mechanism discovered by Damour and Esposito-Farese; its radiation exhibits a drastically different behaviour dominated by the dispersive character of the mass term which leads to quasi-monochromatic signals that can last years or even centuries. This smoking-gun effect offers unique opportunities to test this class of theories. We dis- cuss the overlap of numerous such signals arising from multiple supernova events in the local universe and compare the resulting gravitational-wave energy density with present constraints from LIGO-Virgo observations.

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