

Abstract Submitted
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Can we hear echoes from Exotic Compact Objects?¹ LUIS LONGO MICCHI, Universidade Federal do ABC, NIAYESH AFSHORDI, University of Waterloo / Perimeter Institute for theoretical Physics, CECILIA CHIRENTI, University of Maryland / NASA-GSFC / Universidade Federal do ABC — Exotic compact objects (ECOs) describe a generic class of hypothetical horizonless regular astrophysical objects that have been considered as alternatives to classical black holes. Such objects are expected in theories that, motivated by quantum gravity modifications, predict horizonless objects as the final stage of gravitational collapse. It is theoretically predicted that the gravitational waveform resulting from the coalescence of two ECOs will present secondary pulses after the ringdown, called "echoes". We study the detectability of the first echo in a GW150914-like event, taking into account the binary mass-ratio in the inspiral (responsible for the initial excitation) and a physically motivated prescription for the ECO surface reflectivity (the dominant contributor to the echo amplitude). We find that the threshold for detectability could be achieved during O4, the next LIGO/Virgo/KAGRA observing run.

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