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Quasinormal Modes of Modified Gravity (MOG) Black Holes[1]
LUCIANO MANFREDI CONSOLE, Loyola Marymount Univ, JONAS MUREIKA, Loyola Marymount University, JOHN MOFFAT, Perimeter Institute University of Waterloo — The Quasinormal modes (QNMs) for gravitational and electromagnetic perturbations are calculated in a Scalar-Tensor-Vector (Modified Gravity) spacetime, which was initially proposed to obtain correct dynamics of galaxies and galaxy clusters without the need for dark matter. It is found that for the increasing model parameter α, both the real and imaginary parts of the QNMs decrease compared to those for a standard Schwarzschild black hole. On the other hand, when taking into account the $1/(1+\alpha)$ mass re-scaling factor present in MOG, $\mathrm{Im}(\omega)$ matches almost identically that of GR, while $\mathrm{Re}(\omega)$ is higher. These results can be identified in the ringdown phase of massive compact object mergers, and are thus timely in light of the recent gravitational wave detections by LIGO.

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