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Quasinormal spectra of higher dimensional regular black holes in theories with infinite curvature corrections

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We investigate the quasinormal modes of several families of higher-dimensional regular black holes arising in gravitational theories that incorporate an infinite tower of higher-curvature corrections to Einstein gravity. Our analysis focuses on how the ringdown phase of gravitational waves for such regular black holes deviates from the predictions of General Relativity. We employ the Wentzel–Kramers–Brillouin (WKB) method to calculate the quasinormal modes and to derive compact analytic expressions in the eikonal approximation. Our results contribute to understanding how possible quantum-gravity-motivated corrections and regularity conditions can manifest in gravitational-wave signals.

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