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Quasinormal modes of slowly rotating black holes in dynamical Chern-Simons gravity PRATIK WAGLE, University of Illinois at Urbana-Champaign, HECTOR SILVA, Max-Planck-Institut fur Gravitationsphysik (Albert-Einstein-Institut), NICOLAS YUNES, University of Illinois at Urbana-Champaign — The detection of gravitational waves from compact binary mergers by the LIGO/Virgo collaboration has, for the first time, allowed us to test general relativity in the strong-field regime and to place new constraints on extensions to Einstein's theory. Here we consider a theory which modifies general relativity by introducing a scalar field coupled to a parity violating Chern-Simons term known as dynamical Chern-Simons gravity. This theory predicts rotating black holes solutions which are different from those of general relativity and could consequently leave imprints in gravitational wave signals. Here we study the linear perturbations of slowly rotating black holes in dynamical Chern-Simons gravity. Working in an effective-field theory approach, we analyze their stability and calculate their quasinormal mode spectra. I will present a brief summary of these studies, their implications and discuss how this could impact the currently placed constraints on dynamical Chern-Simons gravity.

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