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Observational Signatures of Binary Black Holes Mergers in Brans-Dicke Theory of Gravity JAMES HEALY, PABLO LAGUNA, ENRIQUE PAZOS, DEIRDRE SHOEMAKER, Georgia Tech, NICOLAS YUNES, Department of Physics and MIT Kavli Institute — Gravitational wave observations can be used to probe non-linear gravitational interactions and thus provide strong tests of Einstein's theory of general relativity. Using the tools of numerical relativity, we present results from the late inspiral and merger of a binary black hole system in Jordan-Brans-Dicke-Fierz theory. In particular, we address whether in this theory the gravitational waves produced during the coalescence differ from those from general relativity. We discuss how future gravitational wave observations of binary black hole mergers could be used to place bounds on such scalar-tensor theories.

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