

Abstract Submitted
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Eccentricity Matters: Improvement of Constraints on Jordan-Brans-Dicke-Fierz Theory with Gravitational Waves from Eccentric Compact Binary Inspirals SIZHENG MA, Montana State Univ, NICOLAS YUNES, Montana State University — Recent gravitational wave observations have allowed stringent new constraints on modifications to General Relativity in the extreme gravity regime. Although these observations were consistent with compact binaries with no orbital eccentricity, gravitational waves emitted in mildly eccentric binaries will probably be detected once detectors reach their design sensitivity. In this talk, I will show explicitly how orbital eccentricity can greatly enhance our ability to constrain deviations from General Relativity. Focusing on scalar-tensor theories, I will first present a closed-form frequency-domain model for gravitational waves emitted in the inspiral of mixed compact binaries. I will then use this model to estimate the accuracy to which the theory can be constrained through Fisher analysis, using both ground- and space-based detectors.

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