

Abstract Submitted  
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**Probing Extreme Gravity with GW150914 and GW151226** KENT YAGI, Princeton University, NICOLAS YUNES, Montana State University, FRANS PRETORIUS, Princeton University — Advanced LIGO's recent discovery of the direct detection of gravitational waves from binary black hole coalescences allow us to probe gravity, for the first time, in extreme gravity regime where the field is both strong and dynamical. In this talk, I will describe how well GW150914 and GW151226 probe fundamental pillars of General Relativity, such as the equivalence principle, Lorentz invariance and massless graviton. I will then compare such new bounds to the existing bounds from Solar System experiments and binary pulsar observations. I will finally explain current limitations of probing extreme gravity with gravitational wave observations and discuss what needs to be done in future.

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