

Abstract Submitted  
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**Probing the Internal Composition of Neutron Stars with Gravitational Waves**<sup>1</sup> KATERINA CHATZIIOANNOU, Montana State Univ, KENT YAGI, Princeton University, ANTOINE KLEIN, University of Mississippi, NEIL CORNISH, NICOLAS YUNES, Montana State Univ — Gravitational waves from neutron star binaries carry information about the equation of state of supranuclear matter through a parameter called tidal deformability. This parameter measures the quadrupole deformation of a neutron star in the presence of an external field. Its measurability has been assessed in a number of studies, concluding it could provide important information about the equation of state of neutron star matter. In this talk, I will describe a complimentary approach to the problem of equation of state determination, one which focuses on how information from gravitational waves can be translated in ways that could be of direct benefit to nuclear physicists. Specifically, I will talk about what gravitational waves can tell us about the internal composition of neutron stars, information that is directly applicable to equation of state modeling. I will also briefly discuss the importance of spin-induced precession in the quality of information extracted.

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