

Abstract Submitted
for the APR21 Meeting of
The American Physical Society

Searching for exotic compact objects with expanded gravitational wave templates¹ RICHARD GEORGE, University of Texas at Austin, HORNG SHENG CHIA, Institute of Advanced Study, THOMAS EDWARDS, CHRISTIAN SETZER, GRAPPA/U Amsterdam, CODY MESSICK, AARON ZIMMERMAN, University of Texas at Austin — If they exist, exotic compact objects may have large spin-induced quadrupole moments which are not accounted for in current template-based gravitational wave searches. The phase evolution due to these quadrupole moments can cause these systems to be missed by these searches, especially at lower masses. We propose to search for such exotic stars by including the effect of large-spin induced quadrupoles, through the introduction of dimensionless quadrupole parameters in our templates. The current hurdle is reducing the computational cost of a search which uses a six parameter template bank. I will discuss our effort to construct waveform models with fewer parameters, which match the 6 parameter model at 99% effectualness, and our preliminary search results.

¹NSF Grant PHY-1912578

Richard George
University of Texas at Austin

Date submitted: 08 Jan 2021

Electronic form version 1.4