

Abstract Submitted  
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**A New Waveform Model for Eccentric Binary White Dwarf Systems**<sup>1</sup> SHU YAN LAU, KENT YAGI, PHIL ARRAS, Univ of Virginia — Close white dwarf binaries are promising sources of gravitational-wave signals for Laser Interferometer Space Antenna (LISA). The eccentricity of such a system decays over time due to gravitational-wave emission and tidal friction. In some scenarios, however, the orbits can have a high eccentricity even at the late stage of inspiral. Examples are hierarchical triple systems involving gravitational interactions between the binary and a distant third body. Analyzing the gravitational-wave signals from these systems requires accurate waveform templates. In this talk, I will describe a new waveform model for eccentric binary white dwarf systems taking tides into account. We propose a semi-analytical “kludge model” which gives the quadrupole radiation from a post-Keplerian orbit (obtained numerically) including the post-1-Newtonian effect on point masses as well as the quadrupolar tidal force. We also separately compare the effects on orbital evolution due to various factors including gravitational-wave emission, the additional force on the orbit due to tidally-induced quadrupoles, and the effect of tidal friction. The model aims to provide accurate and efficient templates to study eccentric binary white dwarf systems with LISA.

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Shu Yan Lau  
Univ of Virginia

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