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Period Evolution of Double White Dwarf Binaries Under the Influence of Gravitational Wave Emissions KYLEE MARTENS, University of Wisconsin-Madison, MATT BENACQUISTA, University of Texas Brownsville, CHRIS BELCZYNSKI — Compact objects, such as Double White Dwarf (DWD) binaries, are the most populous producers of gravitational waves (GW) at low frequencies. The gravitational radiation (GR) emitted from the Galactic DWD binary population will create an unresolvable signal known as the confusion noise-limit (CNL) in the space-based evolved Laser Interferometer Space Antenna (eLISA). It is predicted that many thousand DWD binary signals will rise above the CNL and create resolvable GW signals. In previous work, Heather Johnson, from the University of Texas-Austin, produced ∼61 million DWD systems using the binary population features in the StarTrack population synthesis code created by Chris Belczynski. We have created an evolutionary code that continues the period evolution of the DWD binaries under the effects of GR. Our present model only accounts for detached binary systems, but we are working on incorporating more features. Current period evolution models often extrapolate data based on smaller binary populations, however our model will utilize ∼61 million binary systems in order to avoid inaccuracies.We then use two standard cylindrical density distributions to populate a galaxy with the evolved systems. We also discuss correlations between the progenitor binaries and the eLISA sources.

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