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Constraining the Propagation Speed of Gravitational Waves with White Dwarf Binaries

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Ultra-compact white dwarf binaries are strong sources of gravitational radiation, and the galactic white dwarf binaries are major sources for the space-based laser interferometer gravitational wave observatory LISA. Some of these binary systems will also be visible through electromagnetic observations, making them multi-messenger astronomy sources. By comparing the phase differences between gravitational and electromagnetic waves, one can place upper bounds on the speed of gravitational waves. In this project, we proposed to simulate white dwarf populations in the Milky way using population synthesis code COSMIC, to statistically assess the potential of multi-messenger sources to constrain the speed of gravitational waves using LISA and electromagnetic observations.

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