The Beginnings and Ends of Double White Dwarfs

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ELM WDs in Double Degenerates: Formation and the significance for LISA

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Extremely low-mass white dwarfs (ELM WDs) are helium WDs with a mass less than $\sim 0.30\ M_{\odot}$. Most ELM WDs are found in double degenerates (DDs) in the ELM Survey led by Brown and Kilic. These systems are supposed to be significant gravitational-wave (GW) sources in the mHz frequency. In this talk, I first systematically investigated the formation of ELM WDs in DDs by a combination of detailed binary evolution calculation and binary population synthesis, and then compared our results with the observations. Finally, I will explore the GW radiation of such systems and make a prediction for future space-based interferometric GW detectors. See the paper for more details.

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