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Improved white dwarf cooling ages using asteroseismology and eclipsing binaries

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With relatively simple evolution dominated by cooling, white dwarfs are excellent chronometers. Soon, Gaia will uncover hundreds of thousands of new white dwarfs, allowing us to date distinct components of the Milky Way with unprecedented precision. In order to maximize our results we need a more complete understanding of the interior structure of white dwarfs, especially their range of envelope layer masses and core mass fractions. We can empirically address these questions with high-precision photometry, using both space-based asteroseismology and high-speed imaging of eclipsing binaries. I will present some of the most recent observational constraints from both techniques on the core composition and envelope masses of white dwarfs, the two most important parameters controlling the cooling rate of these stellar fossils.

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