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The progenitors of Type Ia Supernovae: a clear-cut case for the Lunar Gravitational Wave Antenna

Despite of the key role of Type Ia Supernovae in cosmology and after decades of research, the nature of their progenitors remains unclear. None of the results obtained so far is sufficiently conclusive and, in some cases, the findings appear to be even in contradiction. Moreover, observations have shown that about 30% of the discovered SNe Ia largely deviate from the properties of 'normal' thermonuclear events, such as peak luminosity, light curve morphology and spectral features. The rising era of GW astronomy opens a new avenue for obtaining independent and direct insights to the SN-Ia progenitors' nature, which remains one of the burning, open questions in modern astrophysics. In my talk I will present the problem and its possible solution in connection to the foreseen GW detectors in the deci-Hz region. In particular, I will describe and discuss the case of the Lunar Gravitational Waves Antenna, which carries the promise of answering this fundamental question.

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