

Abstract Submitted
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Understanding Cosmological Probes of the Dark Side: Computational Studies of Type Ia Supernovae ROBERT FISHER, SUOQING JI, University of Massachusetts Dartmouth, JAN BEHRENDTS, Freie Universität Berlin — Each Type Ia supernova (SN Ia) event has very nearly the same intrinsic brightness regardless of where or when in the universe it exploded. Consequently, SNe Ia provide us with standard candles which have enabled precision cosmological measurements leading to the discovery of the acceleration of the expansion of the universe, and of dark energy – fundamental work recognized by this year’s Nobel prize committee. However, despite these advances, the nature of the progenitors which give rise to SNe Ia, and of the explosion mechanism itself, remain mysterious. While evidence strongly suggests that the progenitors consist of at least one near-Chandrasekhar mass white dwarf in a binary system, both the type of companion, and the precise total mass of the system (either near-critical, or sub- or super-Chandra) are being actively investigated. I will discuss recent computational simulations which have begun to unravel the mystery of these remarkable explosions which probe the dark side of the cosmos.

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