

# Theory Seminar

Monday, April 5, 2010 2:10 PM 831 Pupin Hall

## The Galactic 511-keV Signal, Hidden Valleys, and Supernovae

We examine under what circumstances the INTEGRAL/SPI 511 keV signal can originate from decays of MeV-scale composite states produced by: (A) thermonuclear (type Ia) or (B) core collapse supernovae. The requisite dynamical properties that would account for the observed data are quite distinct, for cases (A) and (B). We determine these requirements in simple hidden valley models, where the escape fraction problem is naturally addressed, due to the long lifetime of the new composite states. The appearance of long-lived particles in typical models leads to cosmological constraints and we address how a consistent cosmic history may be achieved.



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