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The Power of Thermonuclear Supernovae at Late Epochs GINGER BRYNGELSON, Francis Marion University, MARK LEISING, Clemson University, PETER MILNE, University of Arizona (Steward Observatory) — Type Ia supernovae (SNe Ia) shape our understanding of the expansion of the universe in their use as distance indicators. Thought to be the runaway thermonuclear explosion of a white dwarf star in a binary system, SNe Ia are bright enough to be seen in far-way galaxies. Their brightness fades slowly over hundreds of days, powered by radioactive isotopes synthesized in the explosion. At some point after 200 days, the continually expanding ejecta is diffuse enough to allow gamma-rays to escape, and soon the brightness of the SN is only powered by positrons trapped by the SN's magnetic field. Only a handful of SNe Ia have been observed during epochs later than 200 days after explosion in both visible and near-infrared light. We discuss our observations of multiple SNe Ia which exploded in nearby galaxies. These were bright enough to be observed out to late epochs (about 525 days post peak). Their brightness was monitored over time in visible light (B,V,R,I bands) and near-infrared (J,H,K) bands, and light curves were constructed. We convert these observations to luminosity and compare them to a simple positron deposition model to estimate the feasibility of positron escape.

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