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Characterizing the Power of Supernova 2009nr through Photometry and Spectra Integration JONATHAN HEATH, GINGER BRYNGELSON, Francis Marion University — A plot of a supernova's brightness over time produces a light curve. Due to the uniformity of their light curves, type Ia supernovae (SNe Ia) are valuable markers for determining the expansion of the universe and other cosmological parameters. Additional properties related to SNe Ia may also be better understood by examining their late-time light curves, such as their composition, magnetic field, etc. This study examines the behavior of SN 2009nr compared to additional normal SNe Ia at similar epochs. Regarding SN 2009nr, NIR (K, H, J) images using the FLAMINGOS IR Imaging Spectrometer and visible (B, V, R, I) images using the Mosaic 1 imager were taken with the 4m Mayall Telescope at Kitt Peak National-Observatory. In order to characterize the late behavior of SN 2009nr, the supernova's apparent magnitude for each night of observation (by filter) was found using the Image Reduction and Analysis Facility (IRAF). To characterize and relate the additional SNe Ia to SN 2009nr, a Python script capable of solving for fluxes and power contributions in given filters was written. The script uses the Savitzky-Golay filter to first smooth SNe Ia spectra data before integrating under the curves by filter.

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