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SN2019vxm: A Shocking Coincidence between Fermi and TESS

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We present photometric observations of SN2019vxm, a long-lasting, highly luminous Type IIn supernova, including a high-cadence rise captured by *TESS*. SN2019vxm has a broad range of electromagnetic detections ranging from *Swift* x-rays and ultraviolet through to near-infrared ground based surveys. By fitting a broken power-law model to the *TESS* light curve, we constrain the explosion time with an uncertainty of 7.2 hours. Additionally, we analyze the spatially and temporally coincident x-ray burst GRB191117A as a likely shock breakout associated with the supernova at the time of the explosion. Our analysis finds a coincidence confidence of 2.5σ that the two events are correlated. We infer that the progenitor star is likely to be a Blue Supergiant or a Luminous Blue Variable, based on the x-ray properties and the model-fitting to our extensive multi-band photometry.

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