Abstract

Type Ia supernovae are one kind of "standard candle" used to measure distances and the expansion rate of the universe. With the hundreds or thousands of supernovae used in current analyses, the systematic errors now dominate over the statistical errors. Many of these systematics are poorly understood but are expected to have strong signatures at ultraviolet wavelengths. I am using the Swift Gamma-Ray Burst Explorer and Hubble Space Telescope to observe supernovae in the ultraviolet. I will show constraints on progenitor systems and extinction derived from Swift ultraviolet observations. I will also discuss the effects expected from metallicity, asymmetry, and explosion differences, and how ultraviolet observations can improve the use of type Ia supernovae as cosmological probes.