High Redshift Supernovae: Beyond The Epoch of Dark Energy

For nearly two decades the Hubble Space Telescope has been heavily used to locate supernovae in high redshift environments, with the primary goal of improving constraints on the nature of dark energy. Along the way we have made surprising observations on the nature of supernovae themselves, and clues to their elusive progenitor mechanisms, some of which are difficult to reconcile with observations at much lower redshift. From complete volumetric supernova rate histories, that for the first time extend to $z > 2$, we find type Ia supernova delay-time distributions are consistent with a power law of index -1, but with the fraction of prompt ($t_{d} < 500$ Myr) much less than expected from various ground-based surveys. Core collapse supernova rates trace the cosmic star formation rate history, but require stellar progenitors more massive than has been seen in deep studies of nearby events ($M > 20$ M$_{\odot}$). I will also detail our current campaigns on clusters of galaxies (RELICS and the Frontier Fields), where gravitational lens magnification provides a real potential for locating the first, primordial supernovae, while also providing useful constraints on the mass models of the foreground gravitational lenses.

Wednesday, October 26, 2016
4:00pm
108 Hannan Hall
Refreshments will be served at 3:45

Sponsored in part by the Graduate Student Association
For more information, please contact:

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If you would like to request disability accommodations, please contact Patrick Burke at (202)-319-5315 to make arrangements.