

## ABSTRACT

Speaker: Dr. Louis-Gregory Strolger  
Astronomer at the Space Telescope Science Institute

Title: High Redshift Supernovae: Beyond The Epoch of Dark Energy

For over 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 strides in our understanding of supernovae themselves, building our foundations on their progenitor mechanisms. From complete volumetric supernova rate histories extending out to redshift 2, we find type Ia supernova delay-time distributions are consistent with exponentials or power laws of index -1 (truncated at  $t_d < 500$  Myr), consistent with what is expected from double-degenerate mechanisms. Volumetric core collapse supernova rates closely trace the cosmic star formation rate history, but require stellar progenitors more massive than have been seen in deep studies of nearby events. I will describe our campaigns in deep fields and clusters of galaxies, and detail what James Webb and Nancy Grace Roman Space Telescopes will do for the discovery of the first, primordial supernovae, to provide constraints on the initial mass function in epoch of population III stars, and constrains on the epoch of reionization.