

吉田研セミナー

講演者: Dr. Amy Lien (NASA/GSFC)

日時: 7月19日 (金) 午後 1時 – 2時30分

場所: 青山学院大学 理工学部 L棟 L706b

題目: Connecting Core-Collapse Supernovae and Gamma-Ray Bursts in the Great Survey Era

Supernovae and gamma-ray bursts (GRBs) are among the most energetic phenomena in the universe. Understanding the cosmic supernova and GRB rate is essential in many aspects of astrophysics and cosmology, such as exploring the star-formation history and stellar evolution. While Swift, a multi-wavelength space telescope, is observing hundreds of GRBs, several ground-based sky survey, such as Pan-STARRS 1 and EVLA, are quickly expanding the supernova category in the optical and radio regime. Synergies of these surveys make it possible to reveal the missing link between GRBs and supernovae, and make them unique tools for studying the star-formation history. Here, we will discuss forecasts of core-collapse supernova detections for current and upcoming surveys (e.g., LSST), and how these observations give insights on the origins of supernovae and GRBs. Particularly, we will emphasize on probing the failed supernovae, which are massive stars that collapse directly into black holes without optical outbursts and are possible origins of GRBs. Additionally, we will discuss our study of the cosmic GRB rate with the trigger simulation of the Swift Burst Alert Telescope, and its implication on the cosmic star-formation history and supernova-GRB connection.