

CU PHYSICS DEPARTMENT COLLOQUIUM

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Gamma Ray Burst Discoveries with the Swift Mission

Gamma-ray bursts (GRBs) are among the most fascinating occurrences in the universe. They are powerful explosions, visible to high redshift, and thought to be the signature of black hole formation. The Swift Observatory has been detecting 100 bursts per year for 3 years and has greatly stimulated the field with new findings. Observations are made of the X-ray and optical afterglow from ~ 1 minute after the burst, continuing for days. Evidence is building that the long and short duration subcategories of GRBs have very different origins: massive star core collapse to a black hole for long bursts and binary neutron star coalescence to a black hole for short bursts. The similarity to Type II and Ia supernovae originating from young and old stellar progenitors is striking. Bursts are providing a new tool to study the high redshift universe. Swift has detected several events at $z > 5$ and one at $z = 6.3$ giving metallicity measurements and other data on galaxies at previously inaccessible distances. The talk will present the latest results from Swift in GRB astronomy.

Hosted by Szabolcs Marka