Correlated Properties of Gamma-Ray Burst Pulses: From Prompt Emission to the Optical Afterglow

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Gamma-ray burst (GRB) prompt emission is dominated by pulse structures. Surprisingly, GRB pulses are characterized by a bevy of correlated properties which include duration, peak luminosity, spectral hardness, pulse shape, and spectral lag. Correlated properties are found among pulses in all GRB classes, and are apparently formed regardless of environment or progenitor. Pulse properties can be explained in terms of a hard-to-soft spectral evolution indicative of rapid, non-equilibrium energy decay. Pulses are observed in the prompt gamma-ray emission, the early x-ray afterglow, and possibly even the optical afterglow. Because of this, GRB pulse characteristics can be measured from instruments spanning large ranges of spectral and temporal characteristics. I present GRB pulse observations made from orbital telescopes such as the Burst And Transient Source Experiment on NASA's Compton Gamma Ray Observatory as well as observations that can be made using the Stellar Observations Network Group (SONG) whole earth optical telescopes.

DATE: Thursday the 3rd of November, 2011
TIME: 4:00-4:50 pm
(refreshments: 3:45pm)
PLACE: 101 Corcoran Hall, GWU
725 21st Street, N.W. (Between G and H Streets)
METRO STATION: GWU/FOGGY BOTTOM (BLUE & ORANGE LINES)