

Physics Colloquium

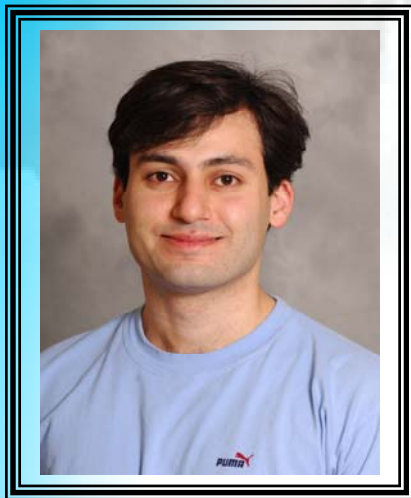
Michigan Technological University

Thursday, February 18, 2008

4:00 - 5:00 pm

Room 139, Fisher Hall

Gamma-Ray Bursts as Cosmological Tools



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Abstract: During the past decade, there has been considerable effort in using Gamma-Ray Bursts (GRBs) as cosmological probes. GRBs are seen well beyond Type Ia supernovae, and hence hold promise as unique probes of universe density and composition -- including dark energy -- in the distant universe. To be so useful, a standard candle must be identified from measured GRB characteristics. In particular, there recently has been a flurry of reports of strong correlations among specific GRB spectral parameters and intrinsic GRB brightness. We show that data accumulated by the now-defunct Compton Gamma Ray Observatory speaks against these recently popular correlations. Specifically, we demonstrate how detector limitations and selection effects strongly bias such correlations. Based on these analyses, we speculate on which attributes of GRBs may still be valuable in cosmological studies.