Gamma-Ray Bursts: The Most Brilliant Events in the Universe

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Swift

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GRBs in Cosmological Context

Lamb (2002)
GRBs as Probes of Very High-Redshift Universe

- Moment of “first light”
- Star formation history of universe
- Metallicity history of universe
- Reionization history of universe

*Lamb and Reichart (2000)*
Conclusions

Gamma-Ray Bursts:

- were discovered serendipitously in 1967
- occur at cosmological distances
- are the most brilliant events in the universe
- involve ultra-relativistic ($v = 0.999 \, c$) jets
- provide important insights into nature of core collapse supernovae
- can provide new constraints on key cosmological parameters
- may be powerful probes of very high redshift ($z > 5$) universe
- are a phenomenon that remains mysterious in many ways