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Theory of plateau phase in GRBs

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Since its discovery in 2005, the plateau phase seen in the early x-ray afterglow of a significant fraction (10's of %) of GRBs confuse theoreticians. A close look reveals that “plateau” bursts nearly never show evidence for LAT emission, neither a thermal component. Using this a hint, I argue that the plateau is due to the coasting of GRB jets in a “wind”-like medium. I will provide the theoretical arguments for the evolution of the lightcurve, and show how both the X-ray and optical lightcurves naturally fitted within the framework of this model. The end of the plateau thus marks the transition between the coasting and the self-similar motion phases.

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Session Classification: Gamma-Ray Burst Correlations: Observational Challenges and Theoretical Interpretation

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