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Observations of the optical afterglow from GRB 060526 with the RTT-150 telescope

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Abstract

Multicolor photometric observations of the optical afterglow from GRB 060526 with the Russian-Turkish 1.5-m RTT-150 telescope (Mount Bakyrlytepe, Turkey) are presented. The afterglow light curve was measured in detail starting from about 5 h after the GRB and over five ensuing nights. In addition, upper limits were obtained on the rapid variability of the afterglow on the first night of observations and the history of afterglow color variations was measured in detail. In the time interval from 6 to 16 h after the burst, the flux gradually decreased approximately as a power law with a slope of -1.14 ± 0.02 . Subsequently, variability was observed on a time scale $\delta t < t$ and the afterglow began to decay much faster. The afterglow color was approximately constant ($V-R \approx 0.5$) throughout the observations, despite the flux variability. Variability time scales up to $\delta t/t \approx 0.0055$ were observed at $\Delta F/F \approx 0.3$, which violates many constraints on the variability of the observed emission from an ultrarelativistic jet obtained by Ioka et al. (2005). We suggest explaining this variability by the fact that the shell motion is no longer ultrarelativistic at this time. © 2007 Pleiades Publishing, Inc.

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Keywords

Afterglows, Cosmic gamma-ray bursts, Optical observations