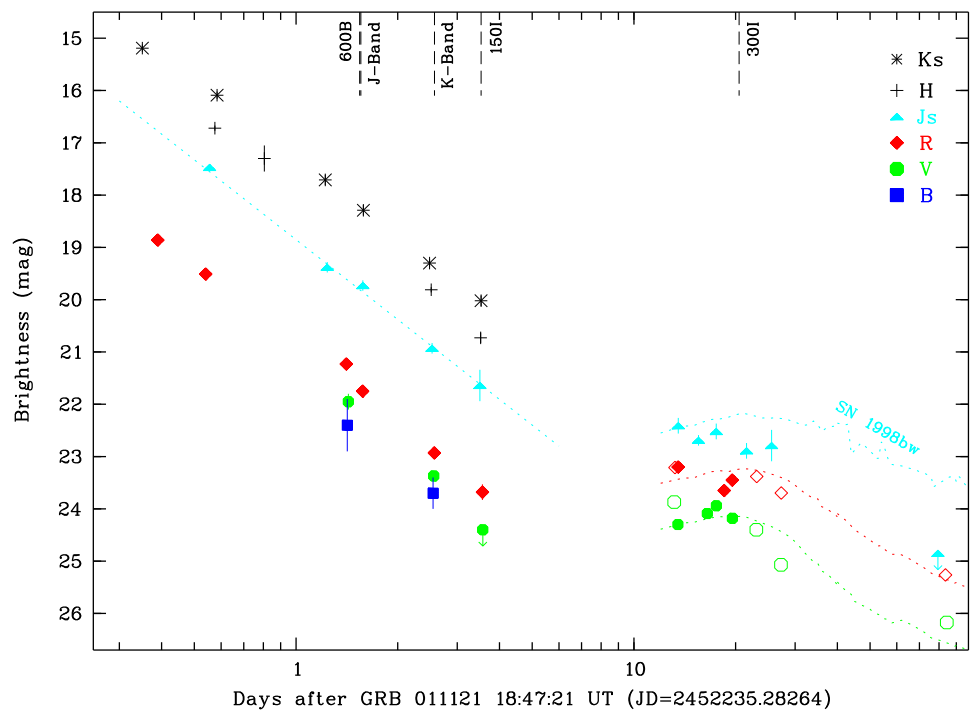
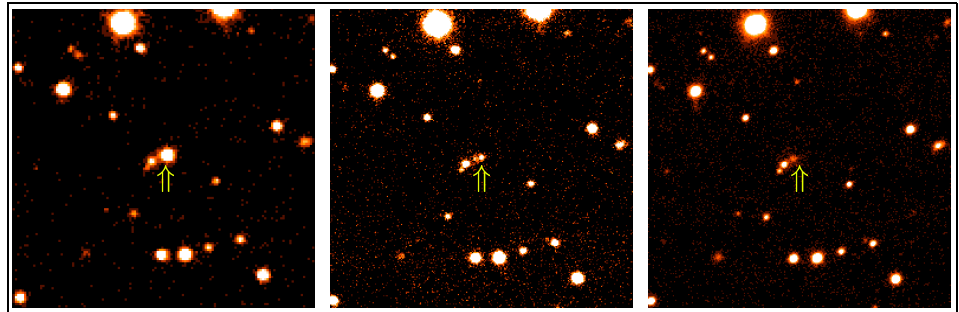


ABSTRACT: Optical/NIR monitoring of GRB 01121 by several groups has revealed a clear deviation of the decay light curve from a power law, characteristic for a supernova-bump. We have (1) obtained the color evolution of the afterglow, and (2) fail to detect the afterglow at 70 days after the GRB, suggesting a very rapid decay. This seems to be inconsistent with a supernova; a dust echo might provide an alternative explanation.

- Relationship between gamma-ray bursts (GRBs) and supernovae (SN) is a question of great importance since it provides a powerful clue to the fundamental nature of GRBs
- Evidence for GRB-SN connection so far is circumstantial:
 - GRB 980425 / SN 1998bw relation is unproven
 - excess emission in GRB 970228 and 980326 is based on very few measurements
- GRB 01121 detected by BeppoSAX; also IPN localization
- follow-up optical/NIR observations by several groups, leading to independent discoveries of the afterglow (Wyrzykowski et al. 2001, Greiner et al. 2001)
- Redshift (emission lines) $z=0.36$
- excess emission above the early power law decay immediately interpreted as a supernova bump
- Distinct color change between power law decay and bump
 - BUT: wrong color evolution!**
 - SN decay usually is slower at longer wavelengths, and maximum is later at longer wavelengths
 - Our light curve: brightness decay in the J band is very rapid. HST data: decay in the R band is slower than in J band. Thus: the longer the wavelength, the faster the decay.
 - the color dependence in GRB 01121 is opposite to SN!

GRB 01121



GRACE observations at ESO (filled symbols) and HST observations (open symbols; Bloom et al. 2002)

Possible alternative interpretation: **Dust Echo** (Esin & Blandford 2000)
 → scattering of prompt optical emission at dust located beyond sublimation radius (0.1–1 pc) of GRB
 → angular dependence of escape probability in expanding cone leads to time dependence; color evolution depends on optical depth for extinction