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The Spectral Energy Distribution of the GRB 000418 Host Galaxy

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Abstract. We report a preliminary analysis of the BVRI-band observations carried out with the Nordic Optical Telescope (NOT) of the GRB 000418 host galaxy. We show that its Spectral Energy Distribution (SED) is consistent with a starburst (with E(B−V)∼0.6) and incompatible with an early-type Hubble sequence galaxy, as an elliptical galaxy.

1. Introduction

The redshift of the GRB 000418 host galaxy is known, (z=1.11854, Bloom et al. 2000), so a fit to its SED gives an unambiguous solution for the galaxy type, at least if the host galaxy is well represented with any of the used spectral templates. For instance, the galaxy templates can be used to connect the host galaxy SED with its morphology. In this paper we use the 12 galaxy templates given by Kinney et al. (1996, hereafter K96). The templates have been convolved with the NOT BVRI filter sensitivity curves and the ALFOSC CCD, giving BVRI synthetic magnitudes which are compared to the observed ones.

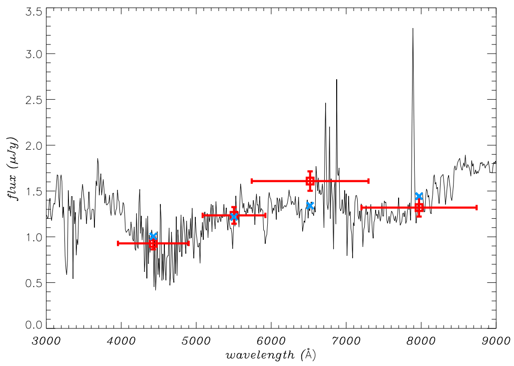

Figure 1. The plot shows the GRB 000418 host galaxy SED in the observer frame. The crosses show the synthetic photometric points whereas the squares on the error barrs represent the measurements.

2. Observations

The observations were carried out with ALFOSC (see Table 1). The calibration is based on the B, D and G standard stars given by Henden et al. (2000).

Table 1. Log of the GRB 000418 host galaxy observations

Date of 2000	Exp. Time (s)	Filter	Seeing
March 30.909-31.043	19×300	I	0.85
March 31.067-31.135	6×900	V	0.95
March 31.921-01.063	18×600	R	1.10
May 01.064-01.189	8×1200	B	1.15

3. Discussion

If we use the 12 templates given by K96 the best fit is obtained with the template called *SB6* (reddened starburst with a colour excess of $0.61 \leq$ E(B−V) ≤ 0.70), although it is not completely satisfactory (χ^2/dof=52/3). If we consider a *SB3* template (reddened starburst having $0.25 \leq$ E(B−V) ≤ 0.35) and an extra-reddening of E(B−V)=0.2 is added, then the fit is improved (χ^2/dof=9.4/2). Both fits are compatible with a colour excess value of E(B−V)=0.57 ± 0.13. The *SB3* template predicts in the JHK bands the following magnitudes J$\sim$22.3, H$\sim$22.0 and K$\sim$21.4 (corrected by Galactic reddening, following Schlegel et al. 1998). Other templates, especially the evolved ones as elliptic galaxy templates, provide extremely poor fits. Further UJHK-band observations will be required to verify whether the GRB 000418 host galaxy is indeed a starburst galaxy and to constrain the age of the dominating stellar population and the extinction law.

References

Bloom, J.S., et al., 2000, GCN 661.

Henden, A., et al., 2000, GCN 662.

Kinney, A.L. et al., 1996, ApJ 467, 38.

Schlegel, D.J., Finkbeiner, D.P., & Davis, M., 1998, ApJ 500, 525.