

COMMISSIONS 27 AND 42 OF THE IAU  
INFORMATION BULLETIN ON VARIABLE STARS

Number 5072

Konkoly Observatory  
Budapest  
11 May 2001

*HU ISSN 0374 – 0676*

**BVR PHOTOMETRY OF SN2000E**

DEVYATKIN, A.V.; GORSHANOV, D.L.

Main Astronomical Observatory of RAS (Pulkovo), Saint-Petersburg, Russia; e-mail: densvet@mail.ru

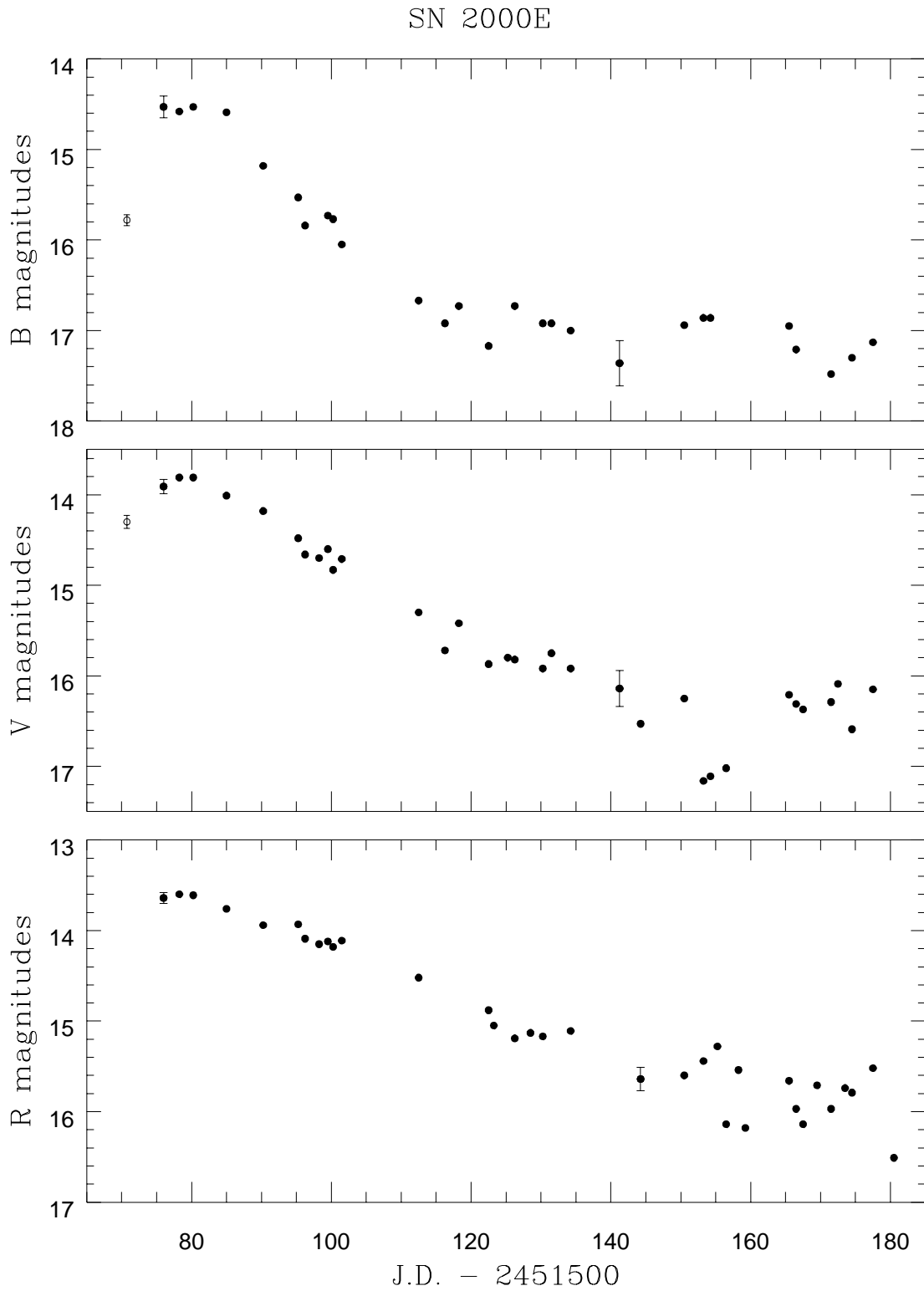
The supernova SN2000E was discovered by Valentini et al. (2000) on January 26.73 in the NGC 6951 galaxy. From February 1 to May 15, 2000 we have observed the supernova SN2000E at Pulkovo Observatory with a ZA-320 32-cm reflector (Bekiashev et al. 1998) equipped with SBIG ST-6 CCD camera. The observations were made in the *B*, *V* and *R* bands of Johnson's photometric system.

Stellar images on the frames were measured by aperture photometry technique using "Apex" code developed at Pulkovo Observatory (Devyatkin et al. 2000).

The field of view of the instrument with ST-6 camera is  $9'.5 \times 7'.5$ . Hence no standard stars were found in the same frame with the supernova. During several nights we observed four standard stars (HD 194258, HD 196229, HD 196848, HD 197894) taken from "The catalogue of *WBVR* magnitudes of bright stars of Northern sky" (Kornilov et al. 1991). An additional star G262-16 (Carney & Latham, 1987) was also observed (in *B* and *V* only). These stars are located within 1 to 4 degrees from the supernova. Using these five stars we found rough magnitudes for 20–30 field stars located in the same frame as the supernova. This procedure was made by a method similar to usual differential photoelectric photometry. The brightness of the supernova was referred to this group of field stars for all dates of observations.

The results are listed in Table 1 and drawn in Figure 1. We estimate the final accuracy of the results  $0^m.12$  for *B*,  $0^m.08$  for *V* and  $0^m.06$  for *R* from February to March (JD 2451576–2451634). In April and May (after JD 2451640) the brightness of the supernova decreased and the brightness of the sky background increased (because the latitude of Pulkovo Observatory is  $+60^\circ$ ). Hence accuracy of the observations became worse:  $0^m.25$  for *B*,  $0^m.20$  for *V* and  $0^m.13$  for *R*.

Our observations started 6 days after the discovery of the supernova. The first three measurements (made during 5 days) were significantly brighter than the discovery brightness of the supernova in *B* and *V* (Valentini et al. 2000). Very probably, our observations started at the maximum light of the supernova. After this time the supernova started fading with a rate of approximately 0.06, 0.05 and 0.04 magnitudes/day in *B*, *V* and *R*, respectively.



**Figure 1.** Observations of SN 2000E in *B*, *V* and *R* colours. The open circles show the discovery brightness of the supernova from Valentini et al. (2000), with their error bars. For comparison, we also plot the errors of the first data of the two parts of our observations with different accuracies, see text

Table 1

JD	<i>B</i>	<i>V</i>	<i>R<sub>J</sub></i>
2451576.198	14.53	13.91	13.64
2451578.332	14.58	13.81	13.60
2451580.225	14.53	13.81	13.61
2451585.199	14.59	14.01	13.76
2451590.240	15.18	14.18	13.94
2451595.227	15.53	14.48	13.93
2451596.378	15.84	14.66	14.09
2451598.353		14.70	14.15
2451599.511	15.73	14.60	14.12
2451600.396	15.77	14.83	14.18
2451601.505	16.05	14.71	14.11
2451612.554	16.67	15.30	14.52
2451616.319	16.92	15.72	
2451618.260	16.73	15.42	
2451622.449	17.17	15.87	14.88
2451623.276			15.05
2451625.334		15.80	
2451626.373	16.73	15.82	15.19
2451628.481			15.13
2451630.386	16.92	15.92	15.17
2451631.411	16.92	15.75	
2451634.358	17.00	15.92	15.11
2451641.398	17.36	16.14	
2451644.362		16.53	15.64
2451650.446	16.94	16.25	15.60
2451653.395	16.86	17.16	15.44
2451654.370	16.86	17.11	
2451655.376		18.56	15.28
2451656.413		17.02	16.14
2451658.379			15.54
2451659.374			16.18
2451665.421	16.95	16.21	15.66
2451666.443	17.21	16.31	15.97
2451667.446		16.37	16.14
2451669.483			15.71
2451671.440	17.48	16.29	15.97
2451672.487		16.09	
2451673.465			15.74
2451674.425	17.30	16.59	15.79
2451677.423	17.13	16.15	15.52
2451680.440			16.51

*Acknowledgments.* The authors thank Pulkovo Observatory researchers A. Gritsuk, E. Kornilov, V. Koupryanov and A. Salovatova for collaboration in the observations as well as I. Kanaev and N. Sokolov for useful discussion.

References:

- Bekiashev, R.H., Kanaev, I.I., et al., 1998, *Izvestiya GAO*, No. 213, 249 (in Russian)  
Carney, B.W., Latham, D.W., 1987, *AJ*, **93**, 116  
Deyatkin, A.V., Gritsuk, A.N., Gorshanov, D.L., Kornilov, E.V., 2000, *Izvestiya GAO*, No. 214, 455 (in Russian)  
Kornilov, V.G., Volkov, I.M., et al., 1991, Trudy GAIS, Moscow Univ. (in Russian)  
Valentini, G., et al., 2000, *IAU Circ.*, No. 7351