

# FIRST OBSERVATION AT THE TÜBİTAK TURKISH NATIONAL OBSERVATORY

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**ABSTRACT.** The B, V and R light curves of well-known close binary W UMa were obtained at the newly constructed TÜBİTAK Turkish National Observatory which located approximately 50 kilometers north of Antalya city. 40 cm telescope donated by Utrecht University was used during the observations. Comparison and check star's observations versus air mass and Check minus Comparison values are presented.

**Key words:** Stars: binaries: close-stars: individual (W UMa) - stars: variable

## Introduction

Observation of the well-known close binary system W UMa was made at the TÜBİTAK Turkish National Observatory having the short name TUG. These observation is very important for the Turkish astronomers. Because this is the first observation at the first National Observatory of Turkey which established by TÜBİTAK (Scientific and Technical Research Council of Turkey). Observatory site is at the Bakırlitepe summit which is one of the highest (2547 m.) summits of the Taurus mountains. Latitude is  $36^{\circ} 51'$  North, longitude is  $30^{\circ} 20'$  East. Time Zone is +2 hours. Astronomical seeing is less than 5 arcseconds. The site is located at the north of Antalya city and approximately 50 kilometers away from it. The official opening of the observatory on September 6th, 1997 but the photoelectric observations are going on since the first observation. Every kind of celestial body –members of the solar system, stars, clusters, intraplanar material, nebulas, galaxies– will be able to be observed fotometrically and spectroscopically

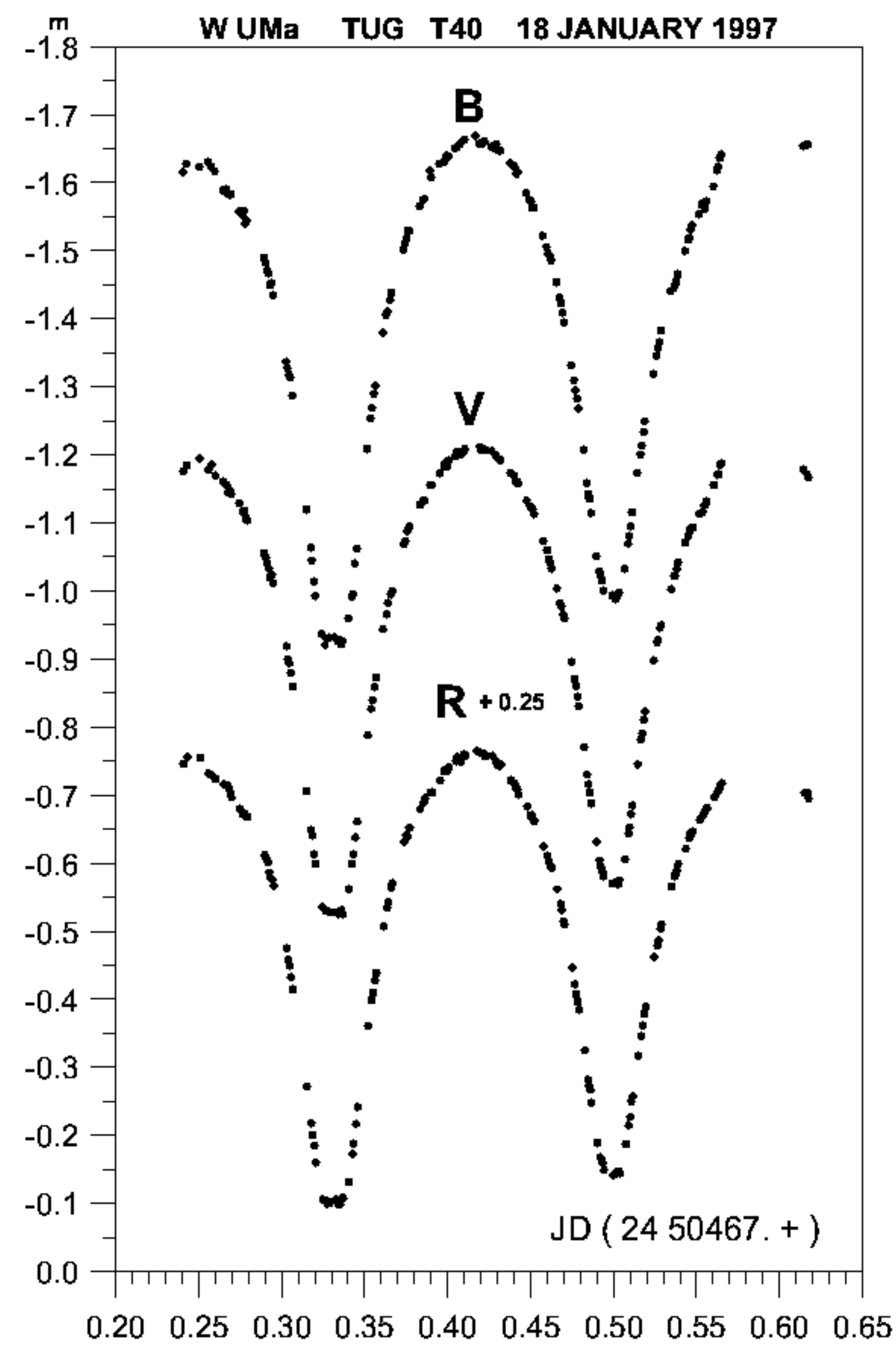


Figure 1: B, V and R light curves of W UMa obtained at the TÜBİTAK Turkish National Observatory.

at optic wavelengths in near future at the observatory. Still constructing 1.5 m. telescope of the observatory is a joint project between IKI RAN (Space Research Institute of the Russian Academy of Sciences), EAO (Engelhardt Astronomical Observatory of Tatarstan) and TÜBİTAK. We hope to obtain the first light with this telescope in the second half of 1998.

Extinction Coefficient	Comparison	Check
k (B)	$0.0742 \pm 0.0038$	$0.0746 \pm 0.0028$
k (V)	$0.1175 \pm 0.0019$	$0.1341 \pm 0.0052$
k (R)	$0.2072 \pm 0.0036$	$0.1424 \pm 0.0201$

Table 1: Atmospheric extinction coefficients for each passband for comparison and check stars.

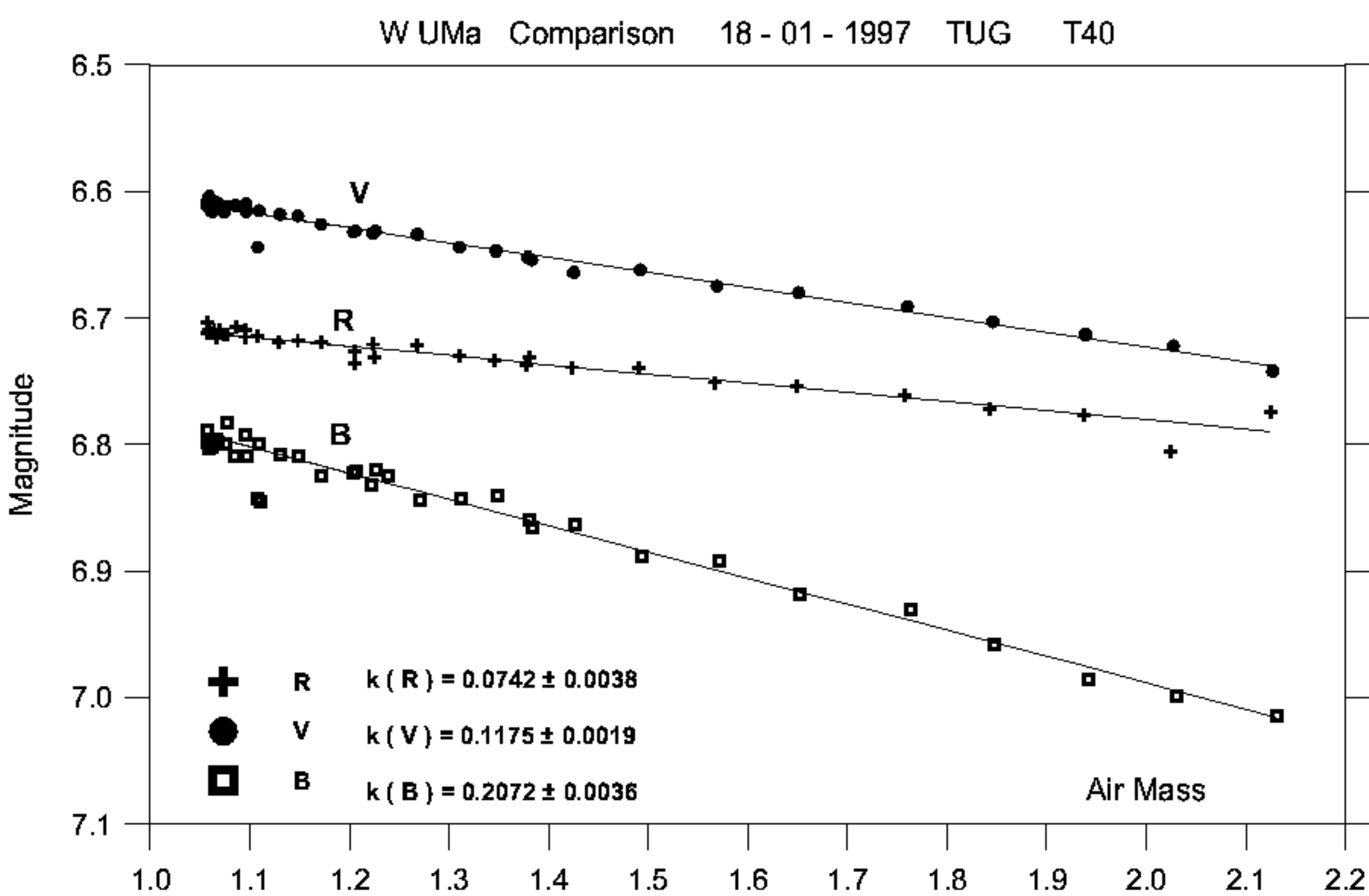


Figure 2: B, V and R observations of the comparison star.

## Observations

Observations of W UMa (BD +56°1400) were recorded using SSP5A photometry provided by Ankara University Observatory. B, V and R standard filters were used during the observations. BD +56°1399 (Hamzaoğlu et al., 1982) and BD +56°1397 were monitored as comparison and check stars, respectively. The differential magnitudes in the sense variable minus comparison were corrected for atmospheric extinction and the times of the individual observations were reduced to the Sun's center. The standard deviations of single differential observation do not exceed 0.005 mag in each passband. The light curves of the system are shown in Fig. 1. R light curve is shifted up 0.25 mag in order to show all three light curves in one figure. In Fig. 2, observations of the comparison star are shown versus air mass. Atmospheric extinction coefficients for each passband were calculated. These values were calculated using only the observations after meridian and used for whole observations. Because the number of observational points before meridian is very less. Magnitude scale is arbitrary in figure.

In Fig. 3, observations of the check star are given versus air mass. Atmospheric extinction coefficients for each passband were also calculated from this observations. These values are very similar to the values obtained from the comparison star.

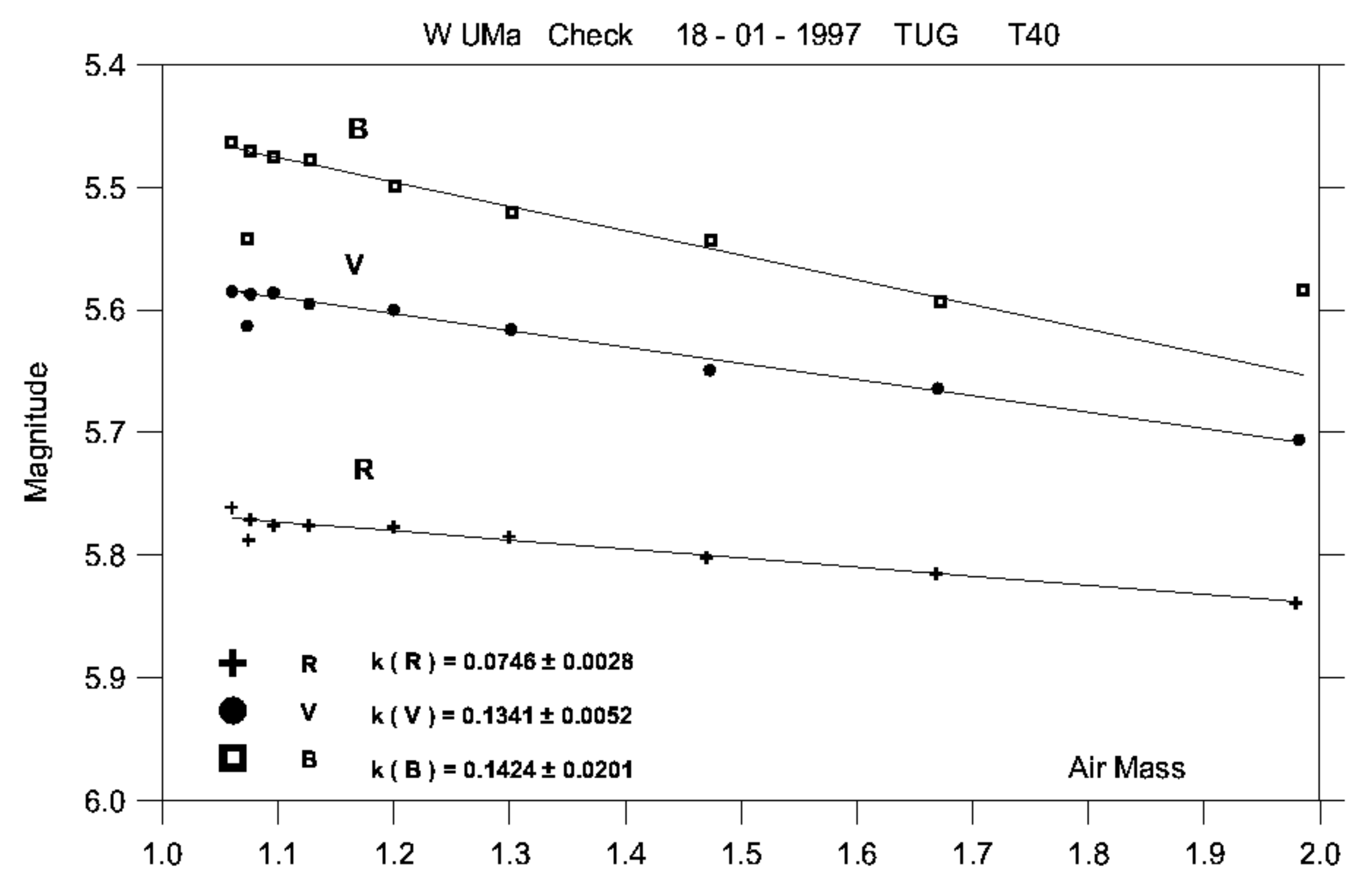


Figure 3: B, V and R observations of the check star.

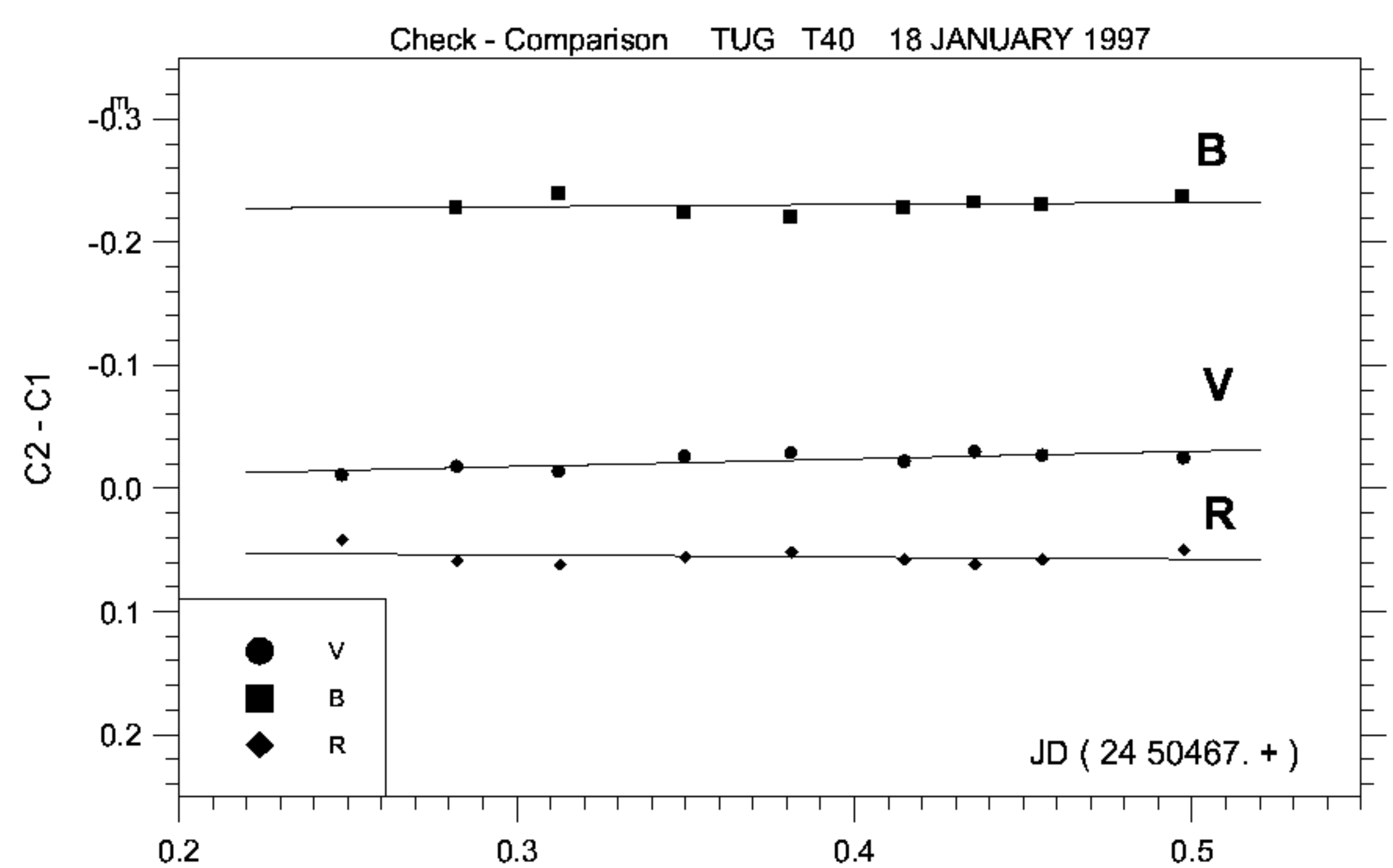


Figure 4: Comparison - Check curve.

In Fig. 4, check minus comparison values versus fraction of day are shown. In figure, linear fits to observations for each passband are also shown in order to see the deviations clearly. Maximum deviation in the figure does not exceed 0.005 mag.

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## References

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