PHOTOELECTRIC MEASUREMENTS OF THE BRIGHTNESS OF 52 EUROPA. F. A. Tupieva. Institute of Astrophysics, Tajik Academy of Sciences, Bukhoro Str. 22, Dushanbe, 734042, Tajikistan, fanisa.tupieva@gmail.com

In July-September 1980 the photoelectric measurements of the brightness of 52 Europa were carried out with the 70-cm reflector of the Gissar Observatory of Tajikistan at *UBV* standard spectral bands. The observations were made during 24 nights at the interval of the phase angler from 0°.2 to 16°.

Lightcurve was composed with rotation period $5^h.631$ ([1]). The obtained composite lightcurve has the amplitude 0.15 mag., levels of minimum are equal, levels of maximum differ by 0.05 mag. The phase functions of brightness and color indices $U - B$ and $B - V$ were determined. The average colors $B - V = 0.696 \pm 0.004$ mag., $U - B = 0.398 \pm 0.010$ mag. The changes of $B - V$, $U - B$ with phase angle did not reveal.

52 Europa has the linear phase function of brightness with phase coefficient $\beta = 0.043 \pm 0.003$ mag./deg. for angles $\alpha > 7°.5$ and $\beta = 0.058 \pm 0.002$ mag./deg. for angles $\alpha < 7°.5$. Brightness of asteroid at $\alpha = 0°$ is equal to 6.32 ± 0.03 mag.

H, *G* – approximation of the observed data gives $H = 6.23 \pm 0.02$ mag., $G = 0.16 \pm 0.03$. This approximation badly corresponds to data.

On the phase curve of Europa the increase of brightness by 0.10 mag. for *V* band and 0.15 mag. for *U* band was obtained at the phase angle 8°.7. The same effect was observed for Saturn's rings at the phase angle 4° ([2]) and also for the asteroid 19 Fortuna in the region of phase angles 6-8° ([3]). It may be explained by rainbow effect, i.e. scattering of light by large spherical particles ([2]).

The corrected brightness of asteroid, *V (1, α)* and linear functions (touch-straight for $\alpha<7°$, continuous-straight for $\alpha>7°$) and *H,G* – function (curve) are given in Fig.

References: [1] Michalowski T. et al. (2004) *A&A, 416*, 353-372 [2] Gretski A. (1976) *Vestnik Kharkov. University, 137*, 21-31 [3] Lupishko D. et al. (1981) *Astron. Vestnik 15*, 25-31.