EURO–ASIAN ASTRONOMICAL SOCIETY

XXIX IAO

IV International Remote Astronomy Olympiad

Dhaka, Bangladesh, 6-15. XI. 2025.

Round **Prac**

Group **α** **β** **γ**

language **English**

Practical round. Problems to solve

Group α – problems 11-12,
Groups β, γ – problems 11-13.

Reminding. Problems of the Practical round compiled in such a way that when writing solutions, use of any language is not required from the participant. So

texts are not allowed

in solutions of the problems (neither in the native language, nor in English).

11(αβγ). Vesta. Asteroid (4) Vesta is interesting because it has a spherical shape, but one of its sides is darker than the other. The archives contain data on the observation of Vesta in the third quarter of the 20th century at the V. G. Fesenkov Astrophysical Institute (Alma-Ata, USSR). The data are light curves of the asteroid, taken from observations over some periods of 7 consecutive nights (see separate sheet). The difference in magnitudes with some standard star is plotted along the vertical axis.

11.1. Roughly estimate the period of its axial rotation. Use the drawing(s) and formulas to explain how you did it.

11.2. Create a graph using data from all 7 nights, necessary for a more accurate estimate of the axial rotation period of Vesta.

11.3. Using this graph, make a more accurate estimate of the axial rotation period of the asteroid.