

**PDC2023**  
**Vienna, Austria**

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## POST-IMPACT POLARIMETRY AND PHOTOMETRY OF DIDYMOS

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**Keywords:** *polarimetry, photometry, NEO, DART, Didymos*

### ABSTRACT

On September 26, 2022, the Didymos' satellite Dimorphos was impacted by the spacecraft DART to test the possibility of the kinetic impact method for the deflection of hazardous asteroids. The successful experiment showed the possibility of changing the orbital motion and rotational state of a small natural body (Statler *et al* 2022, *Planet. Sci. J.* 3, 244). A dust cloud around the asteroid and a prominent tail formed after the impact and remained visible for more than 2 months.

We present results of the polarimetric and photometric observations of the binary asteroid Didymos aimed to investigate its surface properties after the DART impact. Our polarimetric observations were carried out for 3 consecutive nights on October 22-24 at the 2-m telescope of the Bulgarian National Astronomical Observatory in Rozhen. The observations of Didymos covered the whole visibility window during each night. The values of linear polarization obtained in the R filter at the phase angle of 76 degrees are higher than typical for S-type asteroids. We detected variations in the degree of polarization of Didymos on each observed night. Our photometric observations of Didymos were carried out during October 21-31 using the smaller-size telescopes at Abastumani, Rozhen and Cerro Tololo observatories. The results of the joint analysis of the polarimetric and photometric measurements will be discussed.

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**Comments:**  
( Oral preferred)