

**Ongoing and Upcoming Mission Highlights**

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**The Decision to Act: Political, Legal, Social, and Economic Aspects**

## **NEAs photometric survey from Loiano Astronomical Station**

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This work presents the results of an observation campaign conducted in the second half of 2024 and which will last until the first half of 2025, aimed at the photometric characterization in the  $BVR_cI_c$  bands of the brightest near-Earth asteroids observable from the northern hemisphere.

The observations were mainly conducted using the “G.D. Cassini” 1.52-m F/4.8 Ritchey-Chrétien telescope of the Loiano Astronomical Station (IAU 598), managed by the Astrophysics and Space Science Observatory of Bologna [1]. The Bologna Faint Object and Spectroscopic Camera (BFOSC) was attached to the telescope, equipped with a Princeton Instruments EEV 1340 × 1300 pixel back-illuminated CCD with 20 μm pixel size. Broad-band Johnson/Cousins  $BVR_cI_c$  filters were used to measure the asteroid’s colours. The second instrument used was TANDEM, Telescope Array eNabling DEbris Monitoring (IAU D98). TANDEM consists of a combo of four customized and independently steerable 35 cm f/3 Newtonian telescopes, each equipped with a Moravian C4-16000 camera, observing through the  $BVR_cI_c$  filters of the Johnson-Cousins system [2], see Fig. 1.

Until now, six near-Earth asteroids have been observed and are expected to reach fifteen at the end of the observation campaign. Each asteroids were characterized by colour index, rotation periods, absolute  $V$  magnitude and effective diameter. For the brightest asteroids in the TANDEM range, it is possible to perform multi-colour photometry simultaneously, as was done for 2024 MK; see Fig. 2.

**Comments:**

*Oral presentation preferred.*

### **References**

- [1] A. Carbognani, A. Buzzoni, G. Stirpe, Physical characterization of the active asteroid (6478) Gault, MNRAS, 506 (2021) 5774–5780.
- [2] A. Buzzoni, A. Carbognani, et al., The TANDEM Project as a pilot case for wide-field telescope arrays, accepted on Astronomical Journal, (2025).

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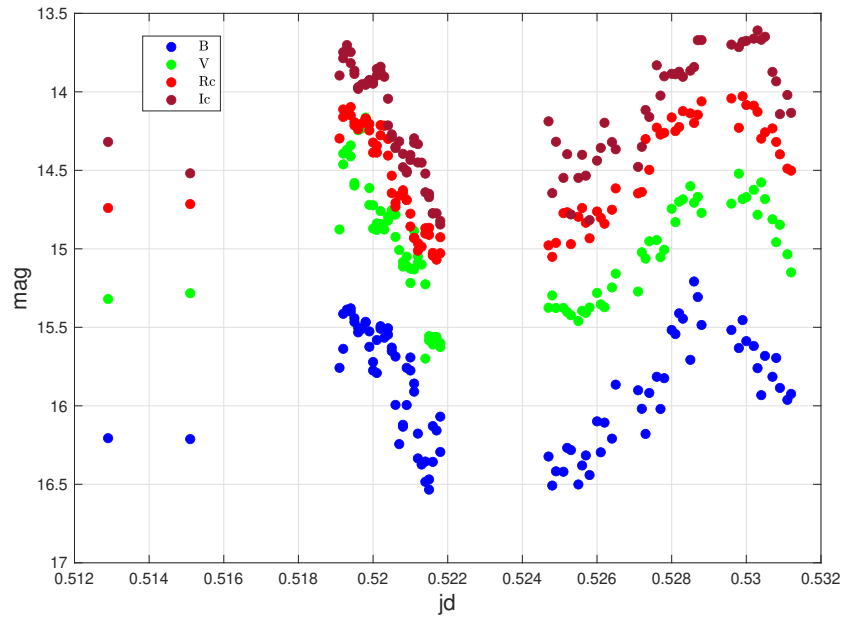
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**Figure 1:** A panoramic view of the “Cassini” telescope and the TANDEM array. “Cassini” is on the right, while TANDEM is the array of 4 telescopes on the left.



**Figure 2:** The four  $BVR_cI_c$  light curves for 2024 MK taken with TANDEM during the night of the 30 Jun 2024. On the abscissa is the fraction of the Julian date of the day 2460492.