

Spectral characterization of (98943) 2001 CC21, fly-by target of Hayabusa2#

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To help solving uncertainties about the surface composition and possible heterogeneity of asteroid (98943) 2001 CC21, next fly-by target of Hayabusa2#, we acquired new visible and NIR photometric and spectroscopic data.

Visible (BVRI) spectrophotometry was obtained on November 2022 in the framework of the European NEOROCKS project, using the 1.2-m telescope located at the Haute-Provence observatory in France. Details of the observations and data reduction are given in [1]. The measured colors are within the range of values typical for S-complex. Figure 1 shows a comparison of the spectral behaviors of 2001 CC21 and templates of Sq, Sr, L and K-types according to the Bus-DeMeo classification scheme [2]. Our observations are well consistent with Sq or Sr types and do not support a L-type classification. This result is in agreement with recently published data on polarimetry and near-infrared spectrometry of this asteroid [3].

On January-February 2023, we also used the 2.6-m NOT telescope (La Palma, Canary Islands, Spain) to acquire visible spectra and NIR photometry of 2001 CC21 at different rotational phases. These data, currently under reduction, will allow us to further constrain its surface composition and possible heterogeneity.

On January 22, 2023 we observed 2001 CC21 in R band and covered the whole rotational period (Fig.2). The CCD observations were carried out using the 0.7-m telescope at the Abastumani Astrophysical Observatory, Georgia. The lightcurve amplitude is 0.75 mag and $P_{rot} \sim 5.03$ hours.

Preliminary results confirm the S-complex taxonomy, and suggest a subtle spectral variation with the rotational phase. An overview of our results will be presented and discussed at the Symposium.

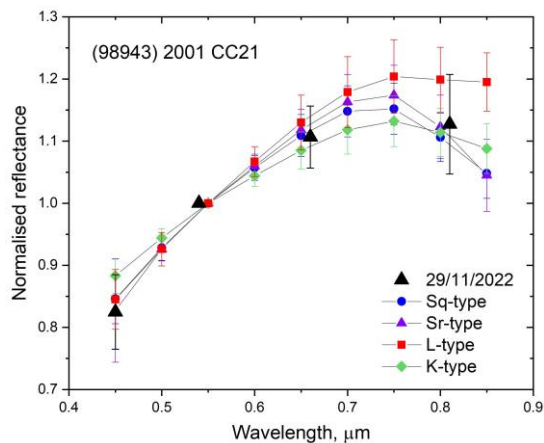


Figure 1. Comparison of 2001 CC21 obtained data with different asteroid taxonomic templates [4].

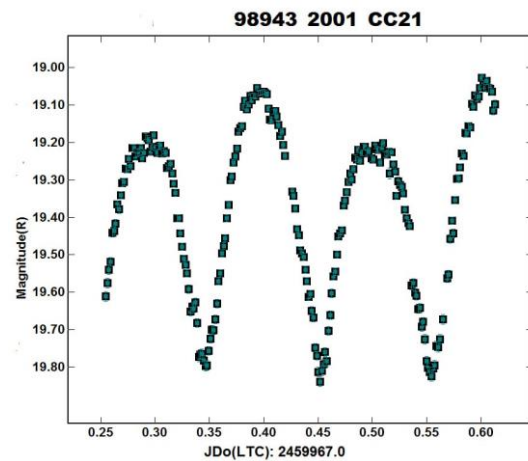


Figure 2. Lightcurve obtained on Jan 22, 2023.

References

[1] Hromakina et al. 2021. MNRAS 520:3143. [2] DeMeo F. et al. 2009. Icarus 202:160. [3] Geem J. et al. 2023. MNRAS 525:L17. [4] Barucci et al. 2023. Abstract #2015, ACM 2023.