

PDC2021
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**Simultaneous observations in four optical bands of near-Earth asteroids using
TCS/MuSCAT2 instrument**

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ABSTRACT

We present the results of an ongoing observational program dedicated to near-Earth objects (NEOs) characterization. This survey use the MuSCAT2 instrument mounted on the 1.52 m Telescopio Carlos Sánchez located at Teide Observatory (Canary Islands, Spain). The setup allows us to obtain simultaneous imaging in the g (400–550nm), r (550–700 nm), i (700–820 nm), and z_s (820–920nm) bands.

The aims of our program are: 1) to obtain a taxonomic classification for a large number of NEOs - the $(r-i)$ vs $(i-z_s)$ plot allows to separate between carbonaceous, silicates, basaltic, and olivine rich compositions; 2) search for possible heterogeneous compositions of NEOs 3) search for cometary activity inside the NEA's population; 4) determine rotational periods and compare them with the compositional types; 5) select the most interesting targets for a spectroscopic follow-up .

We gathered 264 datasets for 200 NEOs. The target selection prioritized the targets observed by radar, the potentially hazardous asteroids and the objects suitable for a space mission. Our targets included the newly discovered objects such as 2018 KE3, 2018 MM8, 2019 HC, 2019 MK2, 2019 OW3, 2020 AZ2, 2020

BP14, 2020 DP4, and the space-mission candidates such as 2015 DP155, (523788) 2015 FP118, (18109) 2000 NG11, 2015 OH. A dedicated pipeline was designed to deal with the large amount of data. Visible colors have proven to be very efficient in order to broadly differentiate between the major compositional groups.

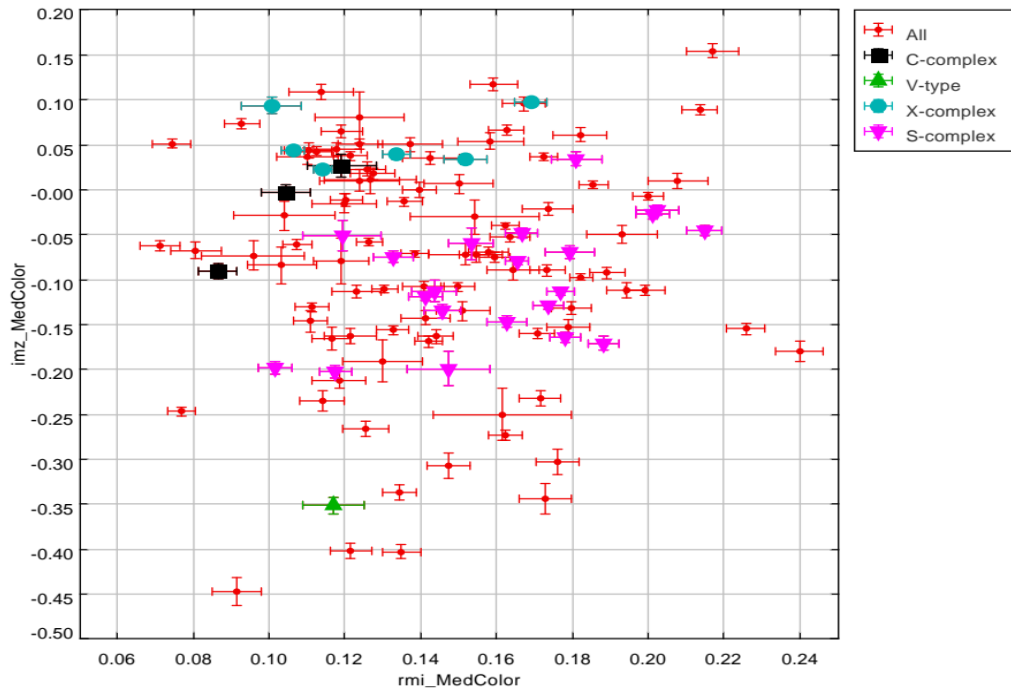


Fig.1 $(r-i)$ vs $(i-z_s)$ color plot. With red are shown all the observed data. The markers correspond to observed with taxonomic classification available from the spectral data (including those from our program)

Comments:

(Alternative session, Time slot, Oral or Poster, Etc...)