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**The Physical Properties of the Near Earth Asteroid 2001 SG286**

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**ABSTRACT**

The near-Earth asteroids (NEA) have become important targets for the space exploration because they are easily accessible in terms of  $\Delta V$  budget. From the scientific point they can provide key information about the early stages of the Solar System, while from the practical point they can serve as in-situ resources.

We aim to make a detailed characterization of the NEA 2001 SG286, which represents a possible target for a sample-return mission, for which the existing spectral data (e.g. Binzel et al. 2004) indicate a peculiar composition. This object is catalogued as a potentially hazardous asteroid (PHA).

We obtained spectroscopic data using the 10.4m Gran Telescopio Canarias equipped with the OSIRIS spectrograph and photometric observations covering 8 nights with the 2.5m Isaac Newton Telescope equipped with the Wide Field CCD camera and Sloan R photometric filter. The acquired high quality spectroscopic data

enabled us to make a precise taxonomic classification of 2001 SG286. Also, the photometric observations revealed its rotational period. We found that 2001 SG286 is an S-type asteroid according to Bus-DeMeo taxonomy, a result which contradicts the previous reports. The rotational period resulted from the photometric observations is around 12 hours.

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