CONTROL ID: 2567106

TITLE: K2 and Herschel/PACS photometry of irregular satellites

ABSTRACT BODY:

Abstract (2,250 Maximum Characters): The combination of optical and far-infrared photometric measurements yields an unambiguous method for characterizing the basic physical and surface properties of minor bodies in the Solar System. In principle, an object with a certain visible brightness can either be an object with a small but bright or a large but dim surface. To resolve this issue, conducting thermal emission measurements can also be acquired since both larger and dimmer objects have higher infrared radiations. In addition, the precise modelling of thermal emission should certainly take into account the rotation period of these bodies - otherwise the presence of surface thermal inertia can result in inaccurate conclusions regarding to the physical size and albedo.

Since early 2014, Kepler Space Telescope surveys fields close to the Ecliptic in a framework of quarterly campaigns of the K2 initiative. This program makes possible to continuously observe Solar System bodies during this period of 80-90 days and hence provide an uninterrupted photometric series of moving Solar System objects down to the magnitude range of R = 23.5. This instrument hence an ideal observatory now for Solar System studies. Due to the fact that the expected rotational periods of these objects are commensurable to the diurnal characteristics of ground-based observations, such uninterrupted light curves are rather valuable for the accurate determination of rotational characteristics - including the physical rotation period, the amplitude and the confirmation of the presence of double- or multiple peaked features.

In this presentation we summarize our results of current K2 and legacy Herschel/PACS observations regarding to some of the irregular satellites of Uranus and Neptune, namely Caliban, Sycorax, Prospero, Setebos and Nereid. By comparing these results with similar kind of observations for trans-Neptunian objects (see Kiss et al., this DPS meeting), one can conclude how the formation and evolution of the outer Solar System were eventuated.

CURRENT * CATEGORY: Outer Irregular Satellites

CURRENT : None

AUTHORS (FIRST NAME, LAST NAME): Andras Pal[1], Csaba Kiss[1], Laszlo Molnar[1], Thomas G. Mueller[3], Krisztian Sarneczky[1], Robert Szabo[1], Laszlo L. Kiss[1], Gyula M. Szabo[2]

INSTITUTIONS (ALL): 1. Konkoly Observatory, Budapest, Hungary.
2. ELTE Gothard Astrophysical Observatory, Szombathely, Hungary.
3. Max-Planck-Institut fur extraterrestrische Physik, Garching, Germany.

Contributing Teams: