

SPACE DEBRIS SYMPOSIUM (A6)
Measurements (1)

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PHYSICAL CHARACTERIZATION OF HIGH AMR DEBRIS BY OPTICAL REFLECTANCE
SPECTROMETRY

Abstract

One of the primary objectives in the characterization of the space debris environment is the identification of the physical properties of the space debris objects. Reflectance spectroscopy is a very promising technique to remotely investigate the surface material of these objects. First spectroscopic observations of debris objects in GEO were acquired during several campaigns in 2009. The results from these campaigns were very promising and encouraged the continuation of these observations in 2010. The measurements were conducted at the 1-meter ESA Space Debris Telescope (ESASDT) on Tenerife with a low-resolution spectrograph in the wavelength range of 450-960 nm. In this work the measurements of the last campaigns are presented. With respect to the first results additional objects in GEO, GTO and fragments with high area-to-mass ratios were observed. Furthermore an improved accuracy in the reduction of the spectroscopy data has been achieved. The spectra of some object were compared with corresponding light curves and colour photometry measurements. Combining these techniques may lead to a more detailed characterization.

Samples of satellite surface materials employed by the space industry were measured with a spectrometer in the laboratory and the obtained spectra compared with remote measurements of space objects. Using these laboratory references a preliminary attempt to classify different types of spectra was made.