High-definition Photometry - new tool for space debris characterization

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High-definition photometry (HDP) is a new method of satellite characterization that allows for detailed reflectivity profiling by correlation of the high-rate brightness measurements with the surface reflection points determined by the object attitude model. We have applied HDP to the high-rate light curve data collected by Graz SLR station and obtained the unique reflectivity profiles of Ajisai and TOPEX/Poseidon that can be further processed for the determination of the weak torques perturbing the satellite attitude dynamics. This presentation will provide details on the HDP method and will demonstrate the obtained satellite profiles. We will also discuss the possible application of the reflectivity analysis to the satellite attitude dynamics modeling. The status of the high-rate photometric network being developed by SERC and the collaborators will be also presented. The network will provide the global coverage and the broad range of the view angles for the HDP characterization of the space debris objects.