SPACE DEBRIS SYMPOSIUM (A6)
Measurements (1)

Author: Dr. Vladimir Agapov
Keldysh Institute of Applied Mathematics, RAS, Russian Federation, avm@kiam1.rssi.ru

Dr. Igor Molotov
Keldysh Institute of Applied Mathematics, RAS, Russian Federation, im62@mail.ru

CHARACTERIZATION OF GEO AND HEO OBJECTS USING MULTI-YEAR STATISTICS ON BRIGHTNESS MEASUREMENTS

Abstract

Since 2003 KIAM collects optical measurements produced by numerous instruments of International Scientific Optical Network (ISON). Each measurement does contain time, position and estimation of brightness of observed object. Large amount of measurements of brightness is collected. Moreover, the KIAM database on orbital objects accumulated most of optical measurement data (of the same type) on high altitude objects collected by instruments of former observation network of the Academy of Science during Soviet Union time.

All measurements are processed and most of them (nearly 99.3 per cent) are correlated with objects for which orbit maintains on regular basis in the KIAM database. Identified with specific launch intact objects (spacecraft, upper stages, apogee kick motors, operational fragments) are classified by type based on available information on their design. All unidentified objects (including a few bright and hundreds of faint ones, supposedly fragments) are tentatively classified by their properties (orbital and physical). Measurements of brightness are grouped based on this classification. Results of statistical analysis of brightness distribution within each group as well as comparison between groups will be presented in this paper.