

SPACE DEBRIS SYMPOSIUM (A6)  
Measurements (1)

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COMPARISON OF PHYSICAL PROPERTIES OF GEO AND HEO OBJECTS TRACKING BY ISON  
DERIVED FROM MULTIYEAR OBSERVATION STATISTICS**Abstract**

Array of data accumulated since 2003 in KIAM space objects database include at present more than 7 millions of optical measurements (astrometric positions and estimations of brightness) produced by numerous instruments of International Scientific Optical Network (ISON) and more than 2 million of orbital parameter estimations for nearly 3500 high altitude objects (mostly in GEO and HEO regions). Statistical processing of obtained multiyear orbital and brightness data revealed many interesting things.

We performed analysis of distributions of average values and their variations for brightness (averaged by the distance and the phase angle) and area-to-mass ratio (AMR) for all tracking objects based on the object type (spacecraft, rocket body, fragment) and the orbit type (GEO, HEO).

Strong common 'aging' effect is clearly noted for brightness of spacecraft regardless of shape and size of objects. Analysis of data for GEO and GEO-like fragments with high AMR gave a clue to the fact that despite of several years of GEO region regular monitoring we still continue to discover more and more relatively bright ones (brighter than 16.5 mag). Also, we noted that number of GTO fragments detecting in GEO survey mode which was steadily increasing before have almost stopped to change. We tried to understand the reason for that.

Results of analysis are presented in this paper.