

SPACE DEBRIS SYMPOSIUM (A6)
Measurements (1)

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SPIN-AXIS DETERMINATION OF SL-8 SECOND STAGE ROCKET BODIES

Abstract

U.S. Air Force Academy cadets and Physics department faculty/researchers are conducting collections and spin-rate analysis of Russian Kosmos SL-8 second stage rocket bodies. Approximately 300 SL-8 rocket bodies are in stable high inclination LEO orbits. These objects are relatively bright ($V = 5-9$ magnitude) and as such are excellent objects for a high cadence (10-20 Hz) temporal measurement program using our 41-cm telescope. All objects are unresolved. Our study analyzes all collections as a common group. Analysis of the collection set with respect to observer elevation angle and solar phase angle provide clues to in-plane body orientations. Approaches from both asteroid pole axis and satellite orientation determination studies by previous researchers are applied to our data set to determine spin-rate and orientation. We show derived spin rates and orientations for the group to look at distributions and aging impacts. Results of these analysis may provide clues when this class of objects is approaching instability.

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