

SPACE DEBRIS SYMPOSIUM (A6)  
Measurements (1)

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CROSS-CHARACTERIZATION OF OBJECTS IN LIBRATION ORBITS AROUND THE WESTERN  
STABLE POINT**Abstract**

The non-spherical nature of the Earth gives rise to two geo-potential wells or “stable points” that affect objects in geostationary and geosynchronous orbits. The existence of the two stable points (Eastern at longitude 75 E, Western at 105 W) causes active satellites to perform E-W station-keeping maneuvers to maintain a constant longitude. Non-station-kept objects will be gravitationally attracted to the closest stable point, and will oscillate about the stable point.

We have identified approximately 45 objects in libration orbits about the Western stable point\*. We have carried out an observation campaign utilizing several optical sensors to collect data on a representative sample of these objects, at a variety of solar phase angles. We collected data in several wavebands, and at different temporal resolutions. We describe our methods, the data collected, our results, and our future plans.

\* Choc, R., Flohrer, T., and Bastida, B., “Classification of Geosynchronous Objects,” Issue 13, ESA/ESOC, February 2011.