51st IAA SYMPOSIUM ON THE SEARCH FOR EXTRATERRESTRIAL INTELLIGENCE (SETI) – The Next Steps (A4)
Interactive Presentations - 51st IAA SYMPOSIUM ON THE SEARCH FOR EXTRATERRESTRIAL INTELLIGENCE (SETI) – The Next Steps (IP)

Author: Dr. Hector Socas-Navarro
Instituto de Astrofisica de Canarias, Spain, hsocas@iac.es

CLARKE EXOBELTS: GEOSYNCHRONOUS ARTIFACTS AROUND EXOPLANETS

Abstract

A Clarke exobelt is a thick belt of artificial objects and graveyard debris in geostationary (GEO) orbit around an exoplanet (Socas-Navarro 2018, see also Sallmen et al 2019). Geosynchronous artifacts are interesting for a number of reasons. First, if detected there would be little doubt that they must be of artificial origin, since there are no know natural processes that would populate the GEO orbit. Second, it is a reasonable extrapolation of current human technology, especially if space elevator technology becomes available. In fact, a simple extrapolation of the current rate of population of our own Clarke belt suggests that it would become detectable from other stars in about 200 years. In this talk I try to address the question of how long do GEO technosignatures live, especially the graveyard of decommissioned artifacts. The results presented here suggest that they might be stable over long periods of time of at least millions of years.