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Title: *"Secular dynamics in the Earth's Geostationary domain"*

Abstract. The talk will provide a review of our recent work, in collaboration with F. Gachet, A. Celletti and G. Puccaco, on the problem of the secular dynamics in the Earth's geostationary orbital domain. We implemented normal form analytical approximations to an original system of 8 degrees of freedom, including the Earth's J2 and J22, lunisolar gravitational perturbations and the solar radiation pressure. The main outcome of our analytical approach is a precise determination of the forced equilibrium (i.e. forced eccentricity and invariant Laplace plane position), which appears as an equilibrium point of a suitably defined secular Hamiltonian. The role of resonances and corresponding small divisors is analyzed. Finally, we discuss the applicability of proper elements for test particles in the GEO domain, as well as the latter's utility in the characterization of various populations of GEO space debris.

Joint work with F. Gachet, A. Celletti and G. Pucacco.