A normally hyperbolic structure near navigation satellites

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Abstract

In this talk we reveal a manifold structure in a 3 degrees-of-freedom Hamiltonian system physically representative of the dynamics of navigation satellites. In particular, long-time properties of the system are explained in terms of the possible normally hyperbolic manifold structure and the associated stable and unstable manifolds regulating transport properties. Besides capturing the region of hyperbolicity of quasi-circular orbits near a Lidov-Kozai resonance, the resulting chaotic escape we describe could inspire the design of end-of-life disposals strategies using manifold dynamics. (Part of our results have been recently published in *Chaotic transport of navigation satellites.* Chaos: An Interdisciplinary Journal of Nonlinear Science, 29, pp. 101-106 (2019).)

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