

## GLOBAL SURFACES OF SECTION AND PERIODIC ORBITS IN THE SPATIAL ISOSCELES THREE BODY PROBLEM

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**Abstract:** In this talk, we study the spatial isosceles three body problem, which is a system with two degrees of freedom after modulo the rotation symmetry. For certain choices of energy and angular momentum, the energy surface is 3- sphere and we find an open book structure where each page is disk-like global surfaces of section for the Hamiltonian flow with the Euler orbit as their common boundary, and a brake orbit passing through them. By considering the Poincaré maps of these global surfaces of section, we prove the existence of all kinds of different symmetric periodic orbits under the nonresonant assumption. Moreover, we are able to prove that the system always has infinitely many symmetric periodic orbits on generic energy surface. We also established formulas between the mean index and rotation numbers. This work is jointed with Xijun Hu, Lei Liu, Pedro A.S. Salomão and Guowei Yu.