For favour of Posting

THE HONG KONG UNIVERSITY OF SCIENCE & TECHNOLOGY

Department of Mathematics

SEMINAR ON PURE MATHEMATICS

Twist Dynamics in the Spatial Isosceles Three-Body Problem

by

Prof. Xijun HU

School of Mathematics
Shandong University

Abstract

We study dynamical constraints arising from Embedded Contact Homology (ECH) in the spatial isosceles three-body problem. For energies below the critical level, the dynamics on the energy surface is identified with a Reeb flow on the tight three-sphere. We obtain quantitative estimates for the Euler orbit, including monotonicity of its transverse rotation number and a strict inequality comparing its action with the contact volume. Combined with the ECH classification of Reeb flows on the tight three-sphere with two simple periodic orbits, these estimates rule out the two-orbit scenario, thus forcing every compact energy surface below the critical level to have infinitely many periodic orbits. The result admits a dynamical interpretation via disk-like global surfaces of section bounded by the Euler orbit. In this setting, the rotation number and the contact volume define a non-trivial twist interval which encodes the relative winding of periodic orbits.

This talk is based on joint works with Lei Liu, Yuwei Ou, Zhiwen Qiao, Pedro A. S. Salomão, and Guowei Yu.

Date : 12 November 2026 (Thursday)
Time : 4:00p.m. – 5:00p.m.
Venue : Room 5402 (near Lift 17 & 18)

All are Welcome!