

AMENDED

THE UNIVERSITY



OF HONG KONG

*Institute of Mathematical Research
Department of Mathematics*

COLLOQUIUM

Invasion of Alien Planet

Professor Zhihong Xia

Northwestern University, USA

Date:	October 16, 2023 (Monday)
Time:	10:30 - 11:30am
Venue:	Room 210, Run Run Shaw Bldg., HKU KK-LG104, KK Leung Building, HKU

Abstract

We show very strong evidence suggesting that a large planet from outside of solar system once invaded our solar system. These evidences are uncovered through the dynamical behaviors of asteroids in the solar system:

1. The mysterious asymmetry in numbers of asteroids for Jupiter Trojans (there are two symmetric stable Lagrangian equilibrium points L4 and L5, but somehow L4 has 8300 asteroids, while L5 has only 4300 asteroids);
2. There is a group of more than 2300 asteroids called Hildas, locked in 2:3 resonance with Jupiter. The mystery is that there appears to be a desert at the most unexpected location --- no asteroids found near the center of the stable region.
3. KAM (Kolmogorov-Arnold-Moser) theory successfully predicted certain distribution of asteroids in the main asteroid belt, particularly the famous Kirkwood gap. However, near different sides Kirkwood gap, there is a clear mysterious asymmetry on the density of asteroids.

These mysteries are perfectly explained, qualitatively and quantitatively, by an invading alien planet. When did it happen? Our initial calculation shows it was about a few hundred million years ago. It is estimated that the probability of a large planet invading the solar system is about once every few hundred million years.

This is a joint work with Jian Li at Nanjing University.

All are welcome