NEW YORK CITY COLLEGE OF TECHNOLOGY
JOINT PHYSICS and MATHEMATICS COLLOQUIUM

Minimal Energy Transfers between Planetary Systems

PRESENTED BY

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Thursday, September 25
at 12:45 PM, Namm 804

Abstract

The exchange of meteorites among the terrestrial planets of our solar system is a well established phenomenon that has triggered discussion of lithopanspermia within the Solar system. Similarly, could solid material be transferred across planetary systems? To address this question, we explore the dynamics of the transfer of small bodies between planetary systems. In particular, a dynamical process that yields very low escape velocities using nearly parabolic trajectories, and the reverse process that allows for low velocity capture is examined. These processes are chaotic and provide a mechanism for minimal energy transfer that yield an increased transfer probability compared to that of previously studied mechanisms that have invoked hyperbolic trajectories. The transfer probability in a stellar cluster as a function of stellar mass and cluster size is estimated and found that significant amounts of solid material could potentially have been transferred from the early Solar system to our nearest neighbor stars.

Light refreshment will be served