For favor of posting

The Hong Kong University of Science & Technology

Department of Mathematics

PhD Student Seminar

The Chaotic Pendulum

by

Mr. Dominic James PEGLER

Abstract

The damped, driven pendulum is a canonical dynamical system in which to explore the incidence and nature of chaotic motion. Yet, despite being the focus of research attention for over 50 years, much remains to be understood. Significant gaps remain in our understanding of the relationship between the parameter space and resultant motion of the system.

This research has as its goal to fill in some of these gaps: over a hitherto under-explored range of the parameter space, numerical investigation reveals a rich range of outcomes, relating both to the system's asymptotic orbits and routes to chaos. In particular, the emergence of Intermittency as a route to chaos for some parameter settings is a key finding. The research to date applies existing analytical approaches to exploration of the parameter space, with the objective of expanding the framework to account for the range of results obtained under the numerical approach.

Date: Tuesday, 7 May 2019

Time: 10:00 a.m. - 11:00 a.m.

Venue: Room 4472 , Academic Building (near Lifts 25-26), HKUST

All are welcome!