



**The Hong Kong Polytechnic University
Department of Applied Mathematics**

Seminar

On

**The Kosambi-Cartan-Chern (KCC) theory and
its applications in chemistry, biology and physics**

by

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Abstract

The Kosambi-Cartan-Chern (KCC) theory represents a powerful mathematical method for the analysis of dynamical systems. In this approach one describes the evolution of a dynamical system in geometric terms, by considering it as a geodesic in a Finsler space. By associating a non-linear connection and a Berwald type connection to the dynamical system, five geometrical invariants are obtained, with the second invariant giving the Jacobi stability of the system. The Jacobi (in)stability is a natural generalization of the (in)stability of the geodesic flow on a differentiable manifold endowed with a metric (Riemannian or Finslerian) to the non-metric setting. In the present talk we review the basic mathematical formalism of the KCC theory, and present some specific applications of this method in chemistry, biology and physics. The Jacobi stability analysis offers a powerful and simple method for constraining the physical properties of different systems, described by second order differential equations.

Date : 2 Oct, 2013 (Wednesday)

Time : 4:00 p.m. – 5:00 p.m.

Venue : HJ610, The Hong Kong Polytechnic University

*** * * ALL ARE WELCOME * * ***