香港浸會大學
HONG KONG BAPTIST UNIVERSITY

香港浸會大學理學院
HKBU Faculty of Science

Department of Mathematics

Science Distinguished Lecture Series

Social Dynamics:
Modeling, Analysis and Numerical Simulation

Professor Eitan Tadmor

Distinguished University Professor
Director, Center for Scientific Computation and Mathematical Modeling
University of Maryland
SIAM-ETHZ Henrici Prize, 2015
AMS Fellow, 2012

Date: **12 December 2014 (Friday)**

Time: **11:00 am - 12:00 noon** (Preceded by Reception at 10:30 am)

Venue: **WLB104, Mrs Padma Harilela Lecture Theatre**
The Wing Lung Bank Building for Business Studies
Shaw Campus, Hong Kong Baptist University

Abstract

We discuss the dynamics of systems driven by the "social engagement" of its agents with their local neighbors through local gradients. Prototype examples include models for opinion dynamics in human networks, flocking, swarming and bacterial self-organization in biological organisms, or rendezvous in mobile systems.

Two natural questions arise in this context: what is the large time behavior of such systems when the time T tends to infinity, and what is the effective dynamics of such large systems when the number of agents N tends to infinity. The underlying issue is how different rules of engagement influence the formation of clusters, and in particular, the tendency to form "consensus of opinions". We analyze the flocking dynamics of agent-based models, present novel numerical methods which confirm the large time formation of Dirac masses at the kinetic level, and end up with critical threshold phenomena at the level of social hydrodynamics.

✦ ✦ ✦   **All are welcome**   ✦ ✦ ✦

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