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HKIAS Distinguished Lecture

Some Equations of Mathematical Biology

Professor Benoît Perthame

Laboratoire J.-L. Lions
Sorbonne-Université, France

Date : 23 May 2019 (Thursday)
Time : 4:30pm – 6:00pm (*Light refreshments will be served from 4:00pm to 4:30pm*)
Venue: Lily Chiang Lecture Theatre (LT-7), 4/F, Yeung Kin Man Academic Building
City University of Hong Kong

Abstract

Equations of mathematical physics are numerous and define many basic principles of physics. The most famous being the Fundamental Principle of Dynamics described by the Newton equations. The Maxwell, Boltzmann or Schroedinger equations illustrate the fundamental principles of electromagnetism, rarefied flows, quantum world.

Through some equations, which also bear famous names, we are going to illustrate several topics from biology: ecology, neuroscience, cell movement, dynamics of tissue growth.

Biography

Benoît PERTHAME is a professor of mathematics at Sorbonne Universite in Paris and, presently, the director of the Laboratoire Jacques-Louis Lions. Before, he has been a professor at Ecole Normale Superieure and the founder of the team Bang at Institut National de la Recherche en Informatique et Automatique, a team focussed on mathematical modeling in life sciences.

His research activities concern Partial Differential Equations, the mathematical object which serves to relate variations in space and time as they arise in fluid flows, heat transfer. He has introduced a new striking relations between dilute flows (Boltzman equation) and dense flows (Euler equations). Recently, he has shown the important role played by nonlinear PDEs in a number of problems from biology as cell motion and cell colonies self-organization, Darwinian evolution, modeling tumor growth and therapy, neural networks.

He was a plenary speaker ICIAM (Vancouver 2011) and at ICM 2014 (Seoul). He was elected at the French Academy of Sciences in 2017.

All are welcome

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