PIMS / AMI Seminar

Friday, March 14, 2014
3:00 p.m.
CAB 657

"Asymptotic behavior of solutions to Euler-Poisson Equations for bipolar semiconductor models"

Professor Ming Mei
Champlain College St.-Lambert
McGill University

Abstract

In this talk we study the Cauchy problem for 1-D Euler-Poisson system, which represents a physically relevant hydrodynamic model but also a challenging case for a bipolar semiconductor device by considering two different pressure functions and a non-flat doping profile. Different from the previous studies for the case with two identical pressure functions and zero doping profile, we realize that the asymptotic profiles of this more physical model are their corresponding stationary waves (steady-state solutions) rather than the diffusion waves. Furthermore, we prove that, when the flow is fully subsonic, by means of a technical energy method with some new development, the smooth solutions of the system are unique, exist globally and time-algebraically converge to the corresponding stationary solutions. The optimal algebraic convergence rates are obtained.

Refreshments will be served in CAB 649 at 2:30 p.m.