NYU-ECNU Institute of Mathematical Sciences at NYU Shanghai

PDE/ANALYSIS SEMINAR

Topic: **Boundary Value Problem for Smectic Liquid Crystals**

Speaker: **Prof. Jinhae Park, Chungnam National University，South Korea**

Time: 15:30 – 16:30, 9 October 2013

Venue: Room 153, Geography Building, 3663 Zhongshan Road North, Shanghai
(华东师范大学中山北路校区，地理楼 153 室)

ABSTRACT OF THE TALK

We prove lower semicontinuity and lower bounds for a Chen-Lubensky energy describing nematic/smectic liquid crystals with physically realistic boundary conditions. The Chen-Lubensky energy captures stable phases of the liquid crystal material, ranging from purely nematic or smectic states to coexisting nematic/smectic states. By including appropriate additional terms, the model includes the effects of applied electric or magnetic fields, and/or electrical self-interactions in the case of polarized liquid crystals. As a consequence of our results, we establish existence of minimizers with weak or strong anchoring of the director field (describing molecular orientation) at the boundary, and Dirichlet or Neumann boundary conditions on the smectic order parameter for the liquid crystal material. This is a joint work with P. Bauman and D. Phillips at Purdue University, USA.

BIOGRAPHY

Professor Jinhae Park is currently an Associate Professor at Chungnam National University in South Korea teaching Mathematics. He graduated with a Ph.D. in Mathematics from the University of Minnesota in 2006. He was recently an invited participant for the programme on the mathematics of liquid crystals in the Isaac Newton Institute from early January to late July of this year.