



NYU-ECNU Institute of Mathematical Sciences at NYU Shanghai

LITERATURE AND WORKING SEMINAR

Topic: On a Nonlinear Eigenvalue Problem Related to MEMS

Speaker: Prof. Feng Zhou

Time: 14:30-16:30, 12 December 2013

Venue: Room 371, Geography Building, 3663 Zhongshan Road North, Shanghai
(华东师范大学中山北路校区, 地理楼 371 室)

ABSTRACT OF THE TALK

In this talk, we discuss some nonlinear eigenvalue problems on a bounded smooth domain of R^n with homogeneous Dirichlet boundary condition, where the nonlinearity is a positive nondecreasing convex function which is singular, that is, it tends to infinity at a finite value. Our study is motivated by a simplified Micro-Electromechanical Systems (MEMS) device model. We extend or improve some qualitative and quantitative results for the MEMS modeling to a general setting, which help us to understand more about the influence of the permittivity profile on the pull-in voltage and the quenching phenomenon. We investigate also the regularity of the corresponding extremal solution. Finally some discussion will be done for the problem with nonlocal term.

BIOGRAPHY

Feng Zhou is a professor of mathematics at ECNU. His current interests include partial differential equations and calculus of variations, in particular asymptotic analysis for nonlinear elliptic problems.