



NYU-ECNU Institute of Mathematical Sciences at NYU Shanghai

LITERATURE AND WORKING SEMINAR

Topic: Nonlocal Heat Flows and an Optimal Partition Problem

Speaker: Stanley Snelson, Ph.D. Candidate at NYU's Courant Institute of Mathematical Sciences

Time: 14:30-16:30, 26 September 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 will first review a well-studied partition problem, where one wishes to partition a domain so that the sum of the first Dirichlet eigenvalues of each subregion is minimized. Caffarelli and Lin showed that this problem is equivalent to finding the energy-minimizing harmonic map from the domain into a singular space. They also studied the regularity of the free interface between the supports of the components.

Second, we will consider a related gradient flow that arises as the limit of a singularly perturbed heat flow with constraints. As in the stationary case, we use monotonicity methods to prove Lipschitz continuity and to characterize the singular set of the interfaces. Finally, we prove that as time goes to infinity, our solution converges to a stationary harmonic map as in the partition problem.

BIOGRAPHY

Stanley Snelson is a Ph.D. candidate at NYU's Courant Institute of Mathematical Sciences, working under Fanghua Lin. He received his M.S. in Mathematics from NYU in 2011, and his undergraduate degree in Applied Mathematics from Columbia University in 2009. He is visiting NYU Shanghai for the Fall 2013 semester.