

1036-35-67

**Cyrill B Muratov\*** (muratov@njit.edu), Department of Mathematical Sciences, NJIT, University Heights, Newark, NJ 07102, and **Matteo Novaga**. *A variational approach to front propagation in reaction-diffusion equations and their singular limits.*

This talk will be an overview of our recent joint work on the variational characterization of front propagation in reaction-diffusion equations in infinite cylinders. We first construct a special class of traveling wave solutions which are minimizers of a Ginzburg-Landau-type functional with an exponential weight. We then show that these solutions govern, in some sense, the propagation speed for the initial value problem with front-like initial data. A few examples of singular problems which can be treated by our approach will be given and an interesting related isoperimetric problem will be discussed. (Received January 09, 2008)