



**The Hong Kong University of Science & Technology**

**Department of Mathematics**

**PhD Student Seminar**

**Threshold dynamics for arbitrary  
surface energy**

by

***Mr. Wei HU***

**Abstract**

The threshold dynamics developed by Merriman, Bence and Osher is an efficient algorithm to simulate mean curvature flow. Selim and Otto derived a variational formulation for threshold dynamics and generalized this method to arbitrary isotropic surface tensions for multi-phase. The consistency and convergence of threshold dynamics are well established.

Selim and other authors extended threshold dynamics to anisotropic surface energy by replacing Gaussian kernel with customized kernel. Consistency and stability are guaranteed though, it is not easy to compute this kernel numerically.

We derived a threshold algorithm to simulate dynamics that minimizing surface energy. Unconditionally stability and convergence are established. Applications to anisotropic energy and two phases flow with insoluble surfactant are presented.

***Date: Monday, 6 May 2019***

***Time: 10:30 a.m. - 11:30 a.m.***

***Venue: Room 3472, Academic Building  
(near Lifts 25-26), HKUST***

***All are welcome!***