Analysis of the thresholding scheme for mean curvature flow in codimension two

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The thresholding scheme, also known as diffusion generated motion, is an efficient numerical algorithm for computing mean curvature flow (MCF). In this talk I will briefly discuss the case of hypersurfaces, and then present our first convergence analysis in the case of codimension two. The proof is based on a new generalization of the minimizing movements interpretation for hypersurfaces (Esedoglu-Otto '15) by means of an energy that approximates the Dirichlet energy of the state function. As long as a smooth MCF exists, we establish uniform energy estimates for the approximations away from the smooth solution and prove convergence towards this MCF. The result relies in a very crucial manner on a new sharp monotonicity formula for the thresholding energy. This is joint work with Aaron Yip (Purdue).

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Big Seminar room Ground floor / Office Bldg West (I21.EG.101)