

1135-35-1559

Tim Laux and **Nung Kwan Yip*** (yip@math.purdue.edu). *Convergence of a thresholding scheme to motion by mean curvature of filaments in R^3 .*

We prove the convergence of a thresholding scheme to the motion by mean curvature of curves (filaments) in space (R^3). The scheme was first proposed by Ruuth-Merriman-Xin-Osher (2001). It generalizes to higher codimensions (codimension equal two) the classical thresholding scheme for hypersurfaces (codimension equal one) which was initiated by Merriman-Bence-Osher in the 90's. The algorithm is essentially a time-splitting scheme, alternating two very simple steps: (1) linear diffusion and (2) projection to functions with norm one. Almost all the proofs of convergence in the hypersurface case make use of maximum principle. Such a technique is not available for higher codimensions. We will formulate the scheme using the gradient flow structure found by Esedoglu-Otto (2015) together with a computation by Lin for an energy estimate for Ginzburg-Landau functional. (Received September 23, 2017)