Applied Mathematics and Scientific Computing Seminar

Wednesday, 17 October 2012, 4:00 p.m.
Room 617 Wachman Hall

(refreshments and social at 3:45 p.m)

FEM for TV Flow without Regularization

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Abstract. The TV flow, that is, the subgradient flow of the energy generated by the BV-norm, and related equations are called very singular diffusion equations, since in flat regions the diffusion is so strong that becomes a nonlocal effect. We propose a method for the solution of this class of equations, which involves no regularization and is unconditionally stable and convergent. To deal with the fact that the underlying nonlinear problems are solved only approximately, we devise an a posteriori error estimator. Applications to materials science are currently under investigation.

Joint work with S. Bartels, R.H. Nochetto and D. Margetis