

# COLLOQUIUM

## Discrete Total Variation Flows

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We propose and analyze an algorithm for the solution of the L2-subgradient flow of the total variation (TV) functional. The algorithm involves no regularization, thus the numerical solution preserves the main features that motivate the use of this type of energy both in imaging and materials sciences. We derive L2 error estimates under minimal regularity assumptions, and introduce a TV-diminishing interpolation operator which yields improved error bounds. We also propose an iterative scheme for the solution of the ensuing discrete problems and analyze it. This methodology extends to the TV functional augmented with a strictly convex functional, such as a p-Laplacian term. We discuss several numerical experiments which illustrate the power and potentials of the method, and explore a model arising in materials science. This is joint work with S. Bartels and A. Salgado.

The lecture will take place in Thackeray 704 at 3:30pm.  
Refreshments will start at 3:00pm.