

A duality based approach to total variation flow in H^{-s}

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We consider the total variation flow in the Sobolev space H^{-s} . We explain the motivation to study this problem in the context of image processing applications and provide its rigorous interpretation under periodic boundary conditions. Furthermore, we present a numerical scheme for approximate solution of a corresponding equation which is based on the dual formulation. We also show and compare results of numerical experiments obtained by application of this scheme for a simple initial data and different values of the index s .