

We propose an energy preserving fully discrete finite element approximation of the regularized stochastic total variation flow (STVF) equation. The problem can be interpreted as a (regularized) stochastically perturbed gradient flow of the total variation energy functional, which is used, e.g., for image denoising and the modelling of damage evolution. Due to its singular character the solution of the stochastic total variation flow has to be formulated as a stochastic variational inequality (SVI). We show that the numerical solution converges to the SVI solution of the STVF equation for vanishing discretization and regularization parameters. We also present numerical experiments to demonstrate the practicability of the proposed numerical scheme.