

This article is concerned with simulation issues arising in the PDE-based image restoration such as the total variation minimization (TVM) and its generalizations. In particular, we study the issues of staircasing and excessive dissipation of TVM-like smoothing operators. A strategy of scaling the algebraic system and a non-convex minimization are considered respectively for anti-staircasing and anti-diffusion. Furthermore, we introduce a variable constraint parameter to better preserve image edges. The resulting algorithm has been numerically verified to be efficient and reliable in denoising. Various numerical results are shown to confirm the claim.