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**Iterative Parameter-choice Algebraic Multigrid for
Anisotropic Diffusion Denoising**

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Anisotropic diffusion methods have shown good qualitative results for image denoising. This paper gives a review of the anisotropic diffusion methodology and its application to image restoration. We investigate an AMG algorithm to solve a regularized anisotropic diffusion equation, which is not only well-posed, but also has a nontrivial steady-state solution. A new regularization parameter-choice method, the Brent-NCP algorithm is introduced, combining Brent's method and the normalized cumulative periodogram (NCP) information about the residual. We test our algorithm on three standard test images. The experimental results demonstrate the effectiveness of the AMG approach and the broad applications of the Brent-NCP parameter-choice algorithm.