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Nonstandard Growth Functionals in Image Restoration

We present a functional of $p(x)$ growth ($p(x) \geq 1$) for which the corresponding minimization problem provides a model for image restoration. The model results in total variation based diffusion along object boundaries and isotropic diffusion in homogeneous regions. At all other locations, the type of anisotropy varies according to the local image information. Existence, uniqueness, and asymptotic behavior of the minimization problem and it's related flow are established.Experimental results show the effectiveness of the model in image restoration.