1015-49-134 **William K Allard*** (`wka@math.duke.edu`), Mathematics Department, Duke University, Box 90320, Durham, NC 27708. *Some new results on total variation regularization.*

Let $s \in \mathbf{L}_\infty(\Omega)$, let $\gamma : [0,\infty) \to [0,\infty)$ be zero at zero, nondecreasing and convex and for $f \in \mathbf{L}_\infty(\Omega)$ let

$$F(f) = \int_\Omega \gamma(|f(x) - s(x)|)\, d\mathcal{L}^n x;$$

$\mathcal{L}^n$ here is Lebesgue measure on $\mathbf{R}^n$. In the denoising literature F would be called a *fidelity* term in that it measures deviation from s which could be a noisy grayscale image. Let $\epsilon > 0$ and, for $f \in \mathbf{L}_\infty(\Omega)$, let

$$F_\epsilon(f) = \epsilon \mathbf{TV}(f) + F(f);$$

here $\mathbf{TV}(f)$ is the total variation of f. A minimizer of F_ϵ is called a *total variation regularization of s*. Rudin, Osher and Fatemi and Chan and Esedoglu have studied total variation regularizations of F where $\gamma(y) = y^2$ and $\gamma(y) = y$, $y \in [0,\infty)$, respectively.

In previous work we gave results about the geometric structure of minimizers; this allowed us to construct interesting examples. In this work we extend and sharpen these results and give some more elaborate examples. (Received February 01, 2006)