

**Meeting:** 1003, Atlanta, Georgia, SS 17A, AMS-SIAM Special Session on Nonsmooth Analysis in Variational and Imaging Problems, I

1003-49-982      **Mila Nikolova\*** ([nikolova@cmla.ens-cachan.fr](mailto:nikolova@cmla.ens-cachan.fr)), CMLA, CNRS UMR 8536 - ENS de Cachan, 61 av. du President Wilson, 94235 Cachan, France. *Essential features of the (local) minimizers of non-smooth regularized functionals.*

We consider functionals  $F : R^p \times R^q \rightarrow R$  composed of a data-fitting term  $\Psi$  and a regularization term  $\Phi$ , namely  $F(x, y) = \Psi(x, y) + \beta\Phi(x)$  where  $\beta > 0$ . Typically,  $\Psi(x, y) = \sum_i \psi(a_i^T x - y_i)$  and  $\Phi(x) = \sum_i \phi(\|G_i x\|)$  where  $a_i$  and  $G_i$  are linear operators. We analyze the properties of the (local) minimizers  $\hat{x}$  of  $F(., y)$  when  $\psi$  or/and  $\phi$  is non-smooth at the origin. We establish specific properties in the case when these functions are also nonconvex. Results are illustrated in the context of image restoration. (Received October 01, 2004)