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*Smoothing Techniques and DC Programming with Applications to Image Reconstructions*

In this talk we present some characterizations of differentiability for real-valued functions based on generalized differentiation. These characterizations provide the mathematical foundation for Nesterov's smoothing techniques in infinite dimensions. As an application, we provide a simple approach to image reconstructions based on Nesterov's smoothing techniques and DCA (Difference of Convex functions Algorithm) that involves the  $\ell_1 - \ell_2$  regularization.