

Convergence of solutions of TV-regularized linear inverse problems

GWENAEL MERCIER

RICAM, Austrian Academy of Sciences

In a recent paper by A. Chambolle et al. [Geometric properties of solutions to the total variation denoising problem. *Inverse Problems* 33, 2017] it was proven that if the subgradient of the total variation at the true data is not empty, the level-sets of the total-variation denoised solutions converge to the level-sets of the true solution with respect to the Hausdorff distance. This talk explores a new aspect of total variation regularization theory based on the source condition introduced by Burger and Osher [Convergence rates of convex variational regularization. *Inverse Problems* 20, 2004] to prove convergence rates results with respect to the Bregman distance. We generalize the results of Chambolle et al. to total variation regularization of general linear inverse problems and show that the source condition implies Hausdorff convergence of level-sets of the total variation regularized solutions.

This is a collaboration with José A. Iglesias and Otmar Scherzer.