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Strong convergence results for total variation regularized inverse problems in a low noise regime

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We consider an imaging inverse problem which consists in recovering a "simple"function from a set of noisy linear measurements. Our approach is variationnal: we produce an approximation of the unknown function by solving a least squares problem with a total variation regularization term. Our aim is to prove this approximation converges to the unknown function in a low noise regime. Specifically, we are interested in a convergence of "geometric"type: convergence of the level sets, of the number of non-trivial level sets, etc. This result is closely related to stability questions for solutions of the prescribed curvature problem. This is a joint work with Vincent Duval and Yohann De Castro.

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