Deautoconvolution in the two-dimensional case

Wednesday, 5 July 2023 10:20 (25 minutes)

We will have a discussion on the reconstruction of a real function of two real variables over the unit square from observations of its autoconvolution on $[0, 2]^2 \subset \mathbb{R}^2$ (full data case) or on $[0, 1]^2$ (limited data case). In an L^2-setting, twofoldness and uniqueness assertions can be obtained for the deautoconvolution problem in 2D. Moreover, by means of an example, we will illustrate the ill-posedness and also the stable approximate solutions to the two-dimensional deautoconvolution problem obtained by Tikhonov-type regularization with different penalties.

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