# The treatment of deautoconvolution as inverse problem, including the multidimensional case

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**Abstract:**

There is extensive mathematical literature on the inverse problem of deautoconvolution for the reconstruction of real-valued as well as complex-valued functions $x$ with support in the unit interval $[0,1] \subset \mathbb{R}$ from its autoconvolution $y = x * x$, but little is known about the multidimensional situation. This talk summarizes mathematical results and application fields in the one-dimensional case. However, it also tries to present recent analytical and numerical results in two and more dimensions. In particular, there are new assertions on uniqueness or twofoldness of solutions to the ill-posed deautoconvolution problem in the multidimensional case, which are based on extensions of the Titchmarsh convolution theorem published by Lions and Mikusiński.

The talk partially presents results of joint work with Yu Deng, Daniel Gerth (TU Chemnitz), Frank Werner (University of Würzburg) and Günter Steinmeyer (Max Born Institute Berlin). Research is supported by the Deutsche Forschungsgemeinschaft (DFG) under grant HO 1454/13-1.