

PETER MATHÉ

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***Optimal Discretization of Inverse Problems in  
Hilbert Scales***

We study the efficiency of the approximate solution of ill-posed problems, based on discretized noisy observations, which we assume to be given beforehand. We restrict ourselves to problems which can be formulated in Hilbert scales. Within this framework we shall quantify the degree of ill-posedness, provide general conditions on projection schemes to achieve the best possible order of accuracy. Conditions are given in terms of approximation properties (Bernstein and Jackson type inequalities) of the involved projections. We pay particular attention on the problem of self-regularization vs. Tikhonov regularization.