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Preface

A variety of algorithms for regularization of discretized ill-posed problems have been developed over the last decades, and the mathematical and numerical numerical aspects of many of these methods are well understood today. Currently there is a lot of attention on the efficient implementation of these algorithms for large-scale problems, where the sparsity or structure of the coefficient matrix must be exploited in order to solve the problem.

This special issue of Numerical Algorithms, titled "Regularization with Sparse and Structured Matrices", presents two surveys of regularization algorithms for such problems. Y.-H. De Roeck discusses direct and iterative methods for sparse regularization problems arising in geophysical migration of reflection seismic data, and his algorithms and observations carry over to other sparse problems as well. P.C. Hansen presents a tutorial survey of regularized deconvolution algorithms for problems that involve Toeplitz and block Toeplitz matrices, with emphasis on the use of the FFT algorithm and – for two-dimensional problems – the Kronecker product.

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