

Weighted Tikhonov Filter Matrices for Ill-posed Problem

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Abstract

We consider the concept of weighted Tikhonov filter matrices in connection to discrete ill-posed and rank-deficient linear problems. Some properties of the weighted Tikhonov filter matrices are given together with their filtering and regularization effects.

We also present perturbation identities for the weighted Tikhonov regularized linear least squares problem using filter matrices generalizing well known weighted perturbation identities for the weighted linear least squares problem and weighted pseudoinverses.

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