

Numerical methods for solving least squares problems with constraints

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Abstract

In this talk, we discuss the problem of solving linear least squares problems and Total Least Squares problems with linear constraints and/or a quadratic constraint. We are particularly interested in developing stable numerical methods when the data matrix is singular or near singular. Of particular interest are matrices which are large and sparse and for which iterative methods must be employed. The quadratically constrained problems arise in problems where regularization is required. For such problems, a Lagrange multiplier is required and that calculation may be quite intensive. The method we propose will quickly yield an estimate of the parameter and allow for finding the least squares solution.