Calvetti, Daniela; **Lewis, Bryan**; **Reichel, Lothar**

On the choice of subspace for iterative methods for linear discrete ill-posed problems. (English) Zbl 0994.65043

Int. J. Appl. Math. Comput. Sci. 11, No. 5, 1069-1092 (2001).

Summary: Many iterative methods for the solution of linear discrete ill-posed problems with a large matrix require the computed approximate solutions to be orthogonal to the null space of the matrix. We show that when the desired solution is not smooth, it may be possible to determine meaningful approximate solutions with less computational work by not imposing this orthogonality condition.

MSC:

65F22 Ill-posedness and regularization problems in numerical linear algebra
65F10 Iterative numerical methods for linear systems

Keywords:

minimal residual method; conjugate gradient method; ill-posed problems

Software:

Regularization tools

Full Text: EuDML