INEXACT INVERSE ITERATION WITH PRECONDITIONING

Alastair Spence
Department of Mathematical Sciences, University of Bath,
Bath BA2 7AY, UK,
e-mail: as@maths.bath.ac.uk

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Abstract

We discuss the efficient solution of shifted linear systems arising in inexact inverse iteration and inexact inverse subspace iteration.

First, we show that an appropriate small rank change to a standard preconditioner can result in significant savings in costs, and in particular, can produce a situation where there is no increase in the costs of the iterative solves even though the solve tolerances are reducing.

Second, we provide an equivalence result for inexact inverse iteration and simplified Jacobi-Davidson when preconditioned iterative solves are applied.

This is joint work with Melina Freitag (Bath), Mickaël Robbé and Miloud Sadkane (Brest).