Martin Stoll

A Bramble-Pasciak-like method with applications in optimization

Oxford University Computing Laboratory
Wolfson Building
Parks Road
Oxford
OX1 3QD
England
martin.stoll@balliol.ox.ac.uk
Andy Wathen
N. I. M. Gould
Dollar, H. S.

The Bramble-Pasciak Conjugate Gradient algorithm is a widely used tool in the finite element community. Motivated by a reformulation of the linear system in saddle point form, we introduce Bramble-Pasciak-like methods that can be used to solve problems coming from optimization. We illustrate that the eigenvalues for the preconditioned matrix in this setup have a very similar (sometimes equivalent) structure to the preconditioned matrix of a method which uses a constraint preconditioner. We furthermore give numerical results for optimization examples.