Verification Of Positive Definiteness For Large Sparse Matrix

Takeshi Ogita JAPAN SCIENCE AND TECHNOLOGY AGENCY, JAPAN ogita@waseda.jp

A method of verifying the positive definiteness for large sparse symmetric matrix is proposed. The method is based on the block Cholesky factorizations and matrix multiplications, so that it can efficiently be implemented on several computing systems including the PC-cluster. With the proposed method, it is efficient to use the ordering technique for sparse matrices such as the reverse Cuthill-McKee ordering which reduces the band-width of the matrices. Numerical results are presented showing the performance of the proposed method.

This is a joint work with Siegfried M. Rump (Hamburg University of Technology) and Shin'ichi Oishi (Waseda University).