

A Multilevel Algorithm for Wavefront Reduction

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A multilevel algorithm for reordering sparse symmetric matrices to reduce the wavefront and profile is described. The algorithm is a combinatorial algorithm that uses a maximal independent vertex set for coarsening the adjacency graph of the matrix and an enhanced version of the Sloan algorithm on the coarsest graph. On a range of examples arising from practical applications, the multilevel algorithm is shown to produce orderings that are better than those produced by the Sloan algorithm and are of comparable quality to those obtained using the hybrid Sloan algorithm. Advantages over the the hybrid Sloan algorithm are that the multilevel approach requires no spectral information and less CPU time.