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Short title: An algebraic substructuring method for large-scale eigenvalue calculation.

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Review text:

Re-ordering and partitioning algorithms enable the authors to split a sparse matrix into submatrices and to extract spectral components (modes) forming approximate large-scale solutions. Critical conditions of success of the “component-mode synthesis” are identified. A connection of accuracy is observed with the canonical matrix pencil congruent to the original problem (viz., with the distribution of the components of its eigenvectors). Error bars are given leading to the effective choice of modes. A finite-element analysis of the cavity resonances leads to the generalized eigenvalue problem chosen as an ultimate illustrative example.