عنوان مقاله:

Algebraic Graph Theory and Optimal Structural Analysis

محل انتشار:

ششمین کنفرانس بین المللی مهندسی عمران (سال: 1382)

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خلاصه مقاله:

In this paper efficient methods are presented for optimal analysis of skeletal structures and finite element models. These methods are based on concepts from algebraic graph theory and comprises of efficient algorithms to calculate the Fiedler vector of the Laplacian matrix of a graph. This vector is used for nodal ordering to obtain wellstructured stiffness matrices with low profiles. The application is made for graph partitioning and correspondingly domain decomposition of finite element meshes for parallel computing. Methods are presented for calculating the Fiedler vector of symmetric structures.

کلمات کلیدی:

optimal structural analysis, ordering, profile, domain decomposition, graph partitioning, Fiedler vector, Laplacian, algebraic graph theory, finite elements, symmetry

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