HYBRID DIRECT-ITERATIVE LINEAR SOLUTION METHOD FOR STRUCTURAL ANALYSIS PROBLEM

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ABSTRACT

In this paper, hybrid direct-iterative linear solution method is proposed to solve large-scale structural analysis problem. Direct solution method is common to finite element structural analysis, but it has some disadvantage compared with iterative method. Iterative method is quite good performance to solve large scale problem, so we can combine both two method to get good performance to solve the structural analysis problem. Hybrid method proposed in this paper is based on Additive-Schwarz domain decomposition method, generally used to various scientific and engineering fields that need high performance computing. Whole problem domain is divided into some piece of subdomains and each internal domain is solved by multifrontal direct method. Additive-Schwarz domain decomposition with multifrontal method is used as preconditioner of Conjugate Gradient. We can good result and performance point of view convergence speed by proposed method.

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