Concurrent Subspace Optimization Using Distributed Network System

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ABSTRACT

Multidisciplinary design problem is usually a coupled system that each discipli-nary analysis depends on output from the other disciplines. Design optimization of the multidisciplinary problems begins with converging the system and local sensitivity analysis, followed by solving the global sensitivity equations to obtain the global sen-sitivity. An all-in-one optimization is then performed to update the design. The entire procedures are repeated until a converged design is obtained. The concurrent subspace optimization method takes one step farther, performing not the sensitivity analyses within subsystem, but the optimization as well. The CSSO method provides the possi-bility for parallel computing. This study develops a network computing system for the CSSO method. Two numerical examples are used to demonstrate the feasibility of concept developed in this study.

Keywords : Multidisciplinary Design Optimization ; Concurrent Subspace Optimization ; Distributed Computing System

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