Topology Optimization Using Multidisciplinary Optimization Technologies

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ABSTRACT

ABSTRACT One of the major difficulties of implementing topology optimization techniques is that it is very time consuming. The computational cost is always very high and sometimes just not acceptable. Most of the researches consider the whole design space of topology optimization problems as a single system. In other words, all design variables are handled simultaneously in single optimization run. This paper proposed a concurrent subsystem optimization method the divides a topology optimization problem into several optimization sub-problems. These sub-problems are optimized simultaneously, probably on different machines. The coordination is done by assigning responsibility of satisfying constraints to each sub-problem. The result shows that the proposed method performs well in a case of topology optimization problem. The success of this method introduces a possibility of implementing parallel computing techniques in topology optimization.

Keywords : Multidisciplinary design optimization ; Non-hierarchic System Decomposition ; Topology optimization

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