عنوان مقاله:

Multiobjective topology optimization of structures using particle swarm optimization algorithm

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خلاصه مقاله:

In this paper a Metaheuristic approach based on stochastic population and Finite element analysis is used to Multiobjective topology optimization of 2D continuum structures. The goal is a topology with minimum material and maximum stiffness resulting in minimum deflection. To aim this goal, objective functions are minimizing strain energy and maximum stress in whole design domain simultaneously with equilibrium constraint. Multiobjective Particle Swarm Optimization algorithm (MOPSO) is used to handle the problem. This approach is based on creating an initial population and update that population combined with an analyzing program , where finite element analysis is used here, can yield an optimized topology design with moving and subtracting materials from design domain. MOPSO algorithm can be considered as a suitable tool for solving general Multiobjective optimization problems and especially for Multiobjective topology optimizations. In this way, analogy with behavior of particles in a community using best personal and global positions to achieve a specific goal, the decision will be made to retention or removal of an element in design domain.

کلمات کلیدی:

Topology optimization, particle swarm optimization, Multiobjective optimization