INTEGRATED STRUCTURAL SIZING OPTIMIZATION

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Abstract

A formulation for structural sizing optimization is presented. The method includes the displacements as state variables and thus integrates the analysis and design process into one combined step. The equilibrium equations are then used as equality constraints in an Augmented Lagrangian formulation. The method currently handles displacement constraints. Stress and ductility constraints are being added as well as general finite element capabilities.

KEYWORDS: Optimization, augmented Lagrangian, integrated design, structural sizing, displacement constraints, planar frames.