

## **A Level Set-based Topology Optimization Method for Local Stress Problems**

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This research presents a topology optimization method for minimum volume design problem with local stress constraint using level set-based structural boundary expressions. First, the optimization problem is formulated using the KS function. Based on the formulation, the topology optimization algorithm is constructed using the Finite Element Method (FEM) for solving governing and adjoint equation and updating the level set function. Here, the design sensitivity is derived using adjoint variable method analytically. Finally, three-dimensional numerical examples are provided to confirm the utility and validity of the proposed topology optimization method.

**Keywords:** Topology Optimization, Level Set Method, Phase Field Method, Optimum Design, Structural Analysis, Finite Element Method