

Stress-constrained topology optimization for compliant mechanism design - DTU Orbit (08/11/2017)

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This article presents an application of stress-constrained topology optimization to compliant mechanism design. An output displacement maximization formulation is used, together with the SIMP approach and a projection method to ensure convergence to nearly discrete designs. The maximum stress is approximated using a normalized version of the commonly-used p-norm of the effective von Mises stresses. The usual problems associated with topology optimization for compliant mechanism design: one-node and/or intermediate density hinges are alleviated by the stress constraint. However, it is also shown that the stress constraint alone does not ensure mesh-independency.

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