

# Homogenization method for lattice structure topology optimization

P. Geoffroy, J. Cortial, O. Pantz, G. Allaire

## Abstract :

Topology optimization aims at finding the most efficient material layout inside a given design volume such that the resulting part fulfills a set of prescribed functional requirements. Compared to other structural design methods, it requires the fewest assumptions and offers the greatest design freedom. However, optimal concepts tend to have limited industrial value since they typically feature complex microscopic structures that are out of reach of traditional or even additive manufacturing processes. The present work builds upon the homogenization method to obtain optimal shapes composed of periodic microscopic cells that are subsequently and readily converted to part designs with lattice substructures suitable for additive manufacturing.