



Sandwich plates of minimal compliance, S. Czarnecki, M. Kurska, T. Lewiński, *Comput. Methods Appl. Mech. Engrg.* 197 (2008) 4866–4881

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The subject of the paper is an optimal choice of material parameters characterizing the core layer of sandwich plates within the framework of the conventional plate theory in which the core layer is treated as soft in the in-plane direction. The mathematical description is similar to the Hencky–Reissner model of plates with transverse shear deformation. Here, however, the bending stiffnesses and the transverse shear stiffnesses can be designed independently. The present paper deals only with optimal design of the core layer to make the plate compliance minimal. Two core materials are at our disposal, which leads to the ill-posed problem. To consider it one should relax this problem by admitting composite domains and characterize their overall properties by the homogenization formulae. The numerical approach is based on this relaxed formulation thus making it mesh-independent. The equilibrium problem is solved by the DSG3 finite element method. The optimization results are found with using the convergent updating schemes of the COC method.