

3D-2D ANALYSIS FOR THE OPTIMAL ELASTIC COMPLIANCE PROBLEM

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A prescribed amount of linear elastic material has to be placed in a design region of very small height in order to maximize the resistance of the plate. We prove that, for the optimal shape and at the limit when the height tends to zero, flexion and extension are coupled through a Kirchhoff-Love motion. We give optimality conditions and find that the (rescaled) optimal shape has a disconnected section. The results differ fundamentally from the results obtained by optimizing the thickness of a plate under the constraint of a connected section.

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