

RESUMO N° 247

MAXIMIZING THE STIFFNESS IN COMPOSITE LAMINATED STRUCTURES USING DMO AND A COMMERCIAL FE SOFTWARE

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In this work a commercial finite element software (ABAQUS) is used together with optimization methodologies to maximize the stiffness of shell type structures where we define a series of candidate materials. The problem uses the Discrete Material Optimization (DMO) method to formulate the optimization problem allowing the use of deterministic gradient-based optimization algorithms, in this case FAIPA (Feasible Arc Interior Point Algorithm). The commercial finite element software (ABAQUS) is used, to define our structure, perform structural analysis and obtain the necessary design sensitivity information. The computational model is tested in several examples and the results are analysed and discussed, with emphasis on optimization efficiency. The DMO formulations will also be discussed.