ANALYSIS AND OPTIMAL DESIGN OF LIGHTWEIGHT COMPOSITE STRUCTURES

Summary - The results of investigation in the area of analysis and optimal design of lightweight composite structures are presented. The thin, two-dimensional and linearly elastic disk made of matrix reinforced with one or two families of long fibres and subjected to service loading is considered. The object of analysis, its mathematical model and relevant optimality conditions for this type design problem are derived in the paper. To solve of the problem, the optimization procedure based on the evolutionary algorithm is proposed. The problem of weight minimization of the composite structures is illustrated by simple numerical examples.