

THE OPTIMAL DESIGN OF STRUCTURAL ELEMENTS MADE OF FIBRE COMPOSITE MATERIALS

Summary – The dissertation is devoted to the problem of optimal design of two-dimensional structures made of fibre composite materials with respect to their heat conductivity properties. The filling fibres orientation was chosen as design parameters. The hybrid optimization algorithm, consists of a sequence of evolution and gradient-oriented procedures was developed. The behaviour analysis of composite structure was carried out using finite element method and gradients of objective functional were obtained with usage of direct method of sensitivity analysis.

Keywords: composite material, heat conduction, the optimal design, hybrid algorithm