

P.S.B.21

**MATHEMATICAL MODELLING AND MULTICRITERIA DESIGN
OPTIMIZATION OF A THIN-WALLED BEAM**

N. Andjelić, B. Rosić, V. Milošević Mitić

Faculty of Mechanical Engineering, University of Belgrade, Belgrade, Serbia

One approach to the optimization of a thin-walled open section beam subjected to complex loads is considered. For given loads, material and geometrical characteristics the problem is reduced to the determination of minimum mass i.e. minimum cross-sectional area of thin-walled beam and minimum of safety factor for the given construction. A method is described to solve a nonlinear parameter optimization problem with several objective functions. In the present work, multicriteria optimization technique is introduced to extremise simultaneously several objective functions. For the defined multicriteria optimization model, a computer program based on interactive dialogue was developed. The graphical illustration of the above problem is presented in terms of objective functions.

P.S.B.22

**PARALLEL ANALYSIS OF HF MEASUREMENTS AND METHOD-OF-MOMENTS
BASED ELECTROMAGNETIC SIMULATION OF LC EMI CHIP FILTERS**

M. Luković¹, O. Aleksić², V. Marić³, Lj. Živanov³

¹Institute of Security, Belgrade, Serbia

²Centre for Multidisciplinary Studies, Belgrade University, Serbia

³Faculty of Technical Sciences, University of Novi Sad, Serbia

In this paper a parallel analysis of HF measurements and electromagnetic simulation of LC EMI chip filters is presented. Electromagnetic (EM) simulator used was method-of-moments based tool Microwave Office (MWO). Insertion loss S₂₁(f) measurements were performed on T-type LC EMIFIL chips (CTC, Korea) realized by multilayer green sheet technology. Two different types of LC filters with peak insertion losses at 300 and 500 MHz respectively were evaluated by a network analyzer in the range from 0 to 3 GHz. After that a full equivalent electrical circuit of LC chip including parasitic components was fitted by MWO tool from the experimental data. The obtained values helped to model the parameters of internal structure of LC filters, which was finally simulated by MWO EM simulator. Obtained simulation results were compared with experimental results and validity of the adopted approach was verified. The paper presented here aims at establishing the quivalency between HF measurements and electromagnetic simulation results done on a particular commercially available LC EMI filter.