



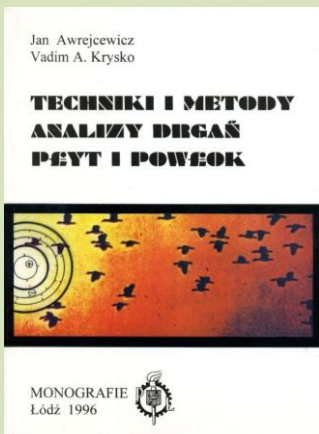
MONOGRAPHS

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Techniques and Methods of Plates and Shells Analysis

(with V.A. Krysko)
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monograph, 140 pages, in Polish
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SUMMARY



In this monograph both theoretical and experimental approaches devoted to plates and shells analysis are described. A special emphasis is put on the theoretical-experimental method applied to analysis of multi-component non-homogeneities and the methods using laser technique. It has been shown, how to use the regression technique during estimation of the function characterizing non-homogeneities.

In addition, a hologram technique used to define the frequencies and corresponding modes is presented. The following non-homogeneity factors are used: holes and thickness variations, shells with various geometry (circular and rectangular) and the various boundary conditions. In the first case the Argyris element with 12 degrees-of-freedom is used to analyse plates with one and two non-homogeneity factors. In the second case different thickness plates and shells are analysed using sixth order approximations.

Analysis of plates and shells vibrations with one-component non-homogeneity is carried out in Chapter 3. Among others, the first 6 frequencies and corresponding modes are estimated. The frequency spectra dependence on the non-homogeneity components is outlined. In Section 3.2 the experimental rigs are described, whereas in Section 3.3 the methods devoted to experimental investigations are outlined. Among others, the influence of non-homogeneous boundary conditions and various holes is investigated.

Chapter 4 is devoted to analysis of the influence of holes (situated on the plates and shells edges) on the vibrations. Many experimental results are reported in tables and figures.

Chapter 5 presents computational results of the plates with holes using FEM. The numerical results are compared with experimental ones.

In Chapter 6 plates and shells with different thickness distribution are analysed using the Bubnov-Galerkin method with various approximations.

Chapter 7 is devoted to experimental investigations of small diameters plates and shells used in electronic techniques. The eigenfrequencies and corresponding modes are found. The obtained results are compared using theoretical-experimental and experimental methods.

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