

Book Review

Free Vibrations of Beams and Frames. Eigenvalues and Eigenfrequencies. By Igor A. Karnovsky and Olga I. Lebed. McGraw Hill, New York, 2004

Authors define the goal of this book as follows: “The objective of this handbook is to provide the most comprehensive, up-to-date reference of known solutions to a large variety of vibration problems of beams and frames”. This is indeed an ambitious objective. Was it fulfilled? The answer to this question is affirmative.

This is a compilation of most of the known results; its value cannot be overestimated. There are some other collections of eigenvalues and eigenfrequencies, but they are either very old and unavailable to the English reader (Ananiew, 1946, Birger and Panovko, 1968 are written in the Russian language) or are quite brief (Flügge, 1962; Pilkey, 1994) as far as vibrations are concerned.

Closest and also wonderful books appear to be those by R.D. Blevins “Formulas for Natural Frequency and Mode Shape”, Van Nostrand Reinhold (1979) and by D.J. Gorman, “Free Vibration Analysis of Beams and Shafts”, Wiley, (1975). Karnovsky and Lebedev’s book is awesomely comprehensive.

The engineer will not have to search in numerous journal articles or books for the needed information. This collection will be of great help to the practicing engineers in many fields: mechanical, civil, aerospace, marine or automotive engineering endeavors. The most important is that the authors inform us that “the majority of results, which are presented in the original sources, have been independently verified by the authors.”

I will only list the titles of the chapters: “Analysis Methods” (Chapter 1), “Fundamental Systems of Classical Beam Theory” (Chapter 2), “Special Functions for the Dynamical Analysis of Beams and Frames” (Chapter 3), “Bernoulli-Euler Uniform Beams with Classical Boundary Conditions” (Chapter 4), “Bernoulli-Euler Uniform One-Span Beams with Elastic Supports” (Chapter 5), “Bernoulli-Euler Beams with Lumped and Rotational Masses” (Chapter 6), “Bernoulli-Euler Multiopan Beams” (Chapter 7), and “Frames” (Chapter 8).

Numerous formulas, tables and figures are given that will constitute the most comprehensive reference at present.

If you are a practicing engineer, please rush to your computer or bookstore to add this book to your library: You simply cannot miss it.

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