Vibro-Acoustics
Anders Nilsson and Bilong Liu
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Anders Nilsson and Bilong Liu present Volume 1 of a three-volume collection of text pertaining to vibro-acoustical theory. This text is intended for graduate students, researcher, and working engineers in the field of sound and vibration. Adapted from the course offered at Chalmers University of the same name in the seventies, the text is also highly recommended for students considering continued education in sound and vibration at said university.

There is an introductory preface provided by Anders Nilsson, followed by a table of contents, a list of helpful notations, eight chapters, references and a comprehensive index.

Each chapter concludes with questions, the answers to which are provided in Volume 3.

Below is a list of the included Chapter topics:

Chapter 1 Mechanical Systems with One Degree of Freedom
Chapter 2 Frequency Domain
Chapter 3 Waves in Solids
Chapter 4 Interaction between Longitudinal and Transverse Waves
Chapter 5 Wave Attenuation Due to Losses and Transmission Across Junctions
Chapter 6 Longitudinal Vibrations of Finite Beams
Chapter 7 Flexural Vibrations of Finite Beams
Chapter 8 Flexural Vibrations of Finite Plates

Each chapter includes subsections that serve to further examine specific cases and consequent theories of the broader chapter topic.

For proper comprehension of more advanced topics of flexural vibrations presented towards the end of the volume, chapters 3 through 5 provide examples and diagrams of key wave behavior and classification in a very presentable fashion.

More advanced topics towards the end of the text may be of interest to the practicing vibro-acoustical consultant. I personally found the in-depth explanation of the Rayleigh-Ritz Method in Sec. 8.3 very insightful, relevantly approached and easy to follow as a member of the aforementioned industry.

I am excited to continue learning from this book, especially as a recent undergraduate with hopes of perhaps continuing education in sound and vibration. Being as well written, illustrated and equipped as this text is, I can easily see this entering the world of academia as highly suggested supplemental literature. Now, when I get a copy of Volume 3, so that I can check my answers to the chapter questions, I will be a happy acoustician!

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