

Active Control of Vibration

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C.R. Fuller, S.J. Elliott, and P.A. Nelson

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This book is a comprehensive account of mechanical systems, control methods used to influence the behavior of these systems, and the fundamentals of active control of vibration. Examples of active control of vibration for several different geometries are also given.

The book begins with an introduction to mechanical vibrations and waves, including single and multiple degree of freedom systems, longitudinal and flexural waves, and vibration of structures such as thin plates and cylinders.

Feedback control is the next subject covered - including such topics as single channel feedback control, single and multichannel feedforward control, and adaptive controllers, both in the frequency and time domains.

The book continues with an introduction to distributed transducers, mostly piezoelectric devices that can be used for active control, and then puts the above elements together in a chapter on methods of active control of structures.

The remaining chapters in the book cover specific aspects of active control of vibrations. These include active isolation of vibrations, active control of plate and cylinder systems. Among other topics, practical examples of isolation of periodic vibrations in road vehicles, and control of interior noise in a jet aircraft fuselage are given.