

1. Record Nr.	UNINA9911006819403321
Autore	Beards C. F
Titolo	Structural vibration : analysis and damping // C.F. Beards
Pubbl/distr/stampa	Oxford, : Butterworth-Heinemann, 1996
ISBN	1-281-07099-8 9786611070991 0-08-051805-2
Descrizione fisica	1 online resource (289 p.)
Disciplina	624.1/7 21 624.17 624.171
Soggetti	Structural dynamics Damping (Mechanics)
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Front Cover; Structural Vibration: Analysis and Damping; Copyright Page; Contents; Preface; Acknowledgements; General notation; Chapter 1. Introduction; 1.1 The causes and effects of structural vibration; 1.2 The reduction of structural vibration; 1.3 The analysis of structural vibration; 1.4 Outline of the text; Chapter 2. The vibration of structures with one degree of freedom; 2.1 Free undamped vibration; 2.2 Free damped vibration; 2.3 Forced vibration; Chapter 3. The vibration of structures with more than one degree of freedom; 3.1 The vibration of structures with two degrees of freedom 3.2 The vibration of structures with more than two degrees of freedom 3.3 Modal analysis techniques; Chapter 4. The vibration of continuous structures; 4.1 Longitudinal vibration of a thin uniform beam; 4.2 Transverse vibration of a thin uniform beam; 4.3 The analysis of continuous structures by Rayleigh's energy method; 4.4 Transverse vibration of thin uniform plates; 4.5 The finite element method; 4.6 The vibration of beams fabricated from more than one material; Chapter 5. Damping in structures; 5.1 Sources of vibration excitation and isolation; 5.2 Vibration isolation 5.3 Structural vibration limits 5.4 Structural damage; 5.5 Effects of

damping on vibration response of structures; 5.6 The measurement of structural damping; 5.7 Sources of damping; 5.8 Active damping systems; 5.9 Energy dissipation in non-linear structures; Chapter 6. Problems; 6.1 The vibration of structures with one degree of freedom; 6.2 The vibration of structures with more than one degree of freedom; 6.3 The vibration of continuous structures; 6.4 Damping in structures; Chapter 7. Answers and solutions to selected problems; Bibliography; Index

Sommario/riassunto

Many structures suffer from unwanted vibrations and, although careful analysis at the design stage can minimise these, the vibration levels of many structures are excessive. In this book the entire range of methods of control, both by damping and by excitation, is described in a single volume. Clear and concise descriptions are given of the techniques for mathematically modelling real structures so that the equations which describe the motion of such structures can be derived. This approach leads to a comprehensive discussion of the analysis of typical models of vibrating structures etc
