



Numerical Analysis of Vibrations of Structures under Moving Inertial Load [

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Springer Berlin Heidelberg,
2012

Engineering

Mechanics

Mechanics, applied

Mechanical engineering

Engineering

Structural Mechanics

Theoretical and Applied Mechanics

Mechanics

Monografía

Moving inertial loads are applied to structures in civil engineering, robotics, and mechanical engineering. Some fundamental books exist, as well as thousands of research papers. Well known is the book by L. Frba, Vibrations of Solids and Structures Under Moving Loads, which describes almost all problems concerning non-inertial loads. This book presents broad description of numerical tools successfully applied to structural dynamic analysis. Physically we deal with non-conservative systems. The discrete approach formulated with the use of the classical finite element method results in elemental matrices, which can be directly added to global structure matrices. A more general approach is carried out with the space-time finite element method. In such a case, a trajectory of the moving concentrated parameter in space and time can be simply defined. We consider structures described by pure hyperbolic differential equations such as strings and structures described by hyperbolic-parabolic differential equations such as beams and plates. More complex structures such as frames, grids, shells, and three-dimensional objects, can be treated with the use of the solutions given in this book

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Título: Numerical Analysis of Vibrations of Structures under Moving Inertial Load [Recurso electrónico] by Czesław (QC(Baw I. Bajer, Bartłomiej (QC(Bomie) Dyniewicz

Editorial: Berlin, Heidelberg Springer Berlin Heidelberg 2012

Descripción física: XII, 284p. 192 illus., 99 illus. in color. digital

Mención de serie: Lecture Notes in Applied and Computational Mechanics 1613-7736 65

Documento fuente: Springer eBooks

Contenido: Introduction -- Analytical solutions -- Semi-analytical methods -- Review of numerical methods of solution -- Classical numerical methods of time integration -- Space-time finite element method -- Space-time finite elements and a moving load -- The Newmark method and a moving inertial load -- Meshfree methods in moving load problems -- Examples of applications

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Detalles del sistema: Modo de acceso: World Wide Web

Fuente de adquisición directa: Springer

ISBN: 9783642295485 9783642295478 ed. impresa)

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Entidades: SpringerLink (Online service)

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