The Trine Of Vibration An Analysis Of The Trines And Practices Of Kashmir Shaivism The Suny Series In The Shaiva Traditions Of Kashmir

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Vibrational Emission of Multiple Types of Trains from Source to Receiver Taha Alyousef 2017 In-motion trains' vehicles generate high intensity vibrations. The manner in which vibrations impact buildings' structures varies upon many factors that were discussed in this research. In this study, an analytical comparison of the difference in vibration emission between two types of trains (passenger train and cargo trains) concerning ground-borne vibration was conducted and two types of wave barriers (Open trench and in-filled trench) near buildings were analyzed. Solutions were discussed at the source, at the path and at the receiver. Yet, a particular emphasis was made at the receiver. Moreover, vibrations emission from trains, transmission in the ground and admittance into buildings were considered meticulously. The field measurement was conducted in Lucas County, Ohio, next to a train track where passenger and cargo trains operated on the same track. A private property was chosen near the train where the field measurement took place. Three 3-D accelerometers were placed at four different distances to measure the incoming vibrations. The process of collecting data lasted about two weeks. Over 40 train measurements were recorded for analysis. Low and high frequency waves are tackled differently when it come to vibration attenuation and damping techniques to protect potential structures. This research has elaborated on the difference in wave emission of different trains by predicting such vibrations at the source and mitigating the by-product effects of vibrations at the receiver. The other part of this study is concerning ground vibration countermeasures, i.e., wave barriers (open and in-filled trenches) around buildings. The wave barrier method is achieved by excavating a trench between the source of vibration and the potential affected structure. One aim of this study was to identify which mitigation practice served the potential affected building best, under the influence of low and high

frequency waves, with reference to efficacy and practicality. Vibration interaction occurrence at track-ground-building has been examined by researchers. Nonetheless, no emphasis has been found on how different trains and the variance in wave frequencies affect nearby buildings. Therefore, the intension of this study is to fulfill that gap by elucidating such an occurrence.

Virtual Security Envelope for Vibration Analysis of a Motorcycle Power Train Eduardo F. Piatti 2007

An Investigation of Off-Road Vehicle Power Train Diagnostics Utilizing High Frequency Vibration Analysis John L. Frarey 1974 The report covers a short three-month program to investigate the feasibility of using high-frequency vibration analysis to diagnose power train condition in off-highway vehicles. The program was conducted on Caterpillar D8H crawler-type tractors. It was found that the use of vibration generated during shift transients to identify spectral regions of interest and to serve as a guide in establishing limits for steady-state vibration analysis appears to be a valid method for diagnosing power train component degradation. Examples of data characteristics considered normal and abnormal for the three major power train components are included in the report. In this respect the program was very fortunate because data from different tractors were recorded and analyzed that varied in age from a new tractor to one that had been used for over 12,000 hours. (Modified author abstract).

Vibrations of Elasto-Plastic Bodies Vladimir Palmov 1998-04-08 Undeservedly little attention is paid in the vast literature on the theories of vibration and plasticity to the problem of steady-state vibrations in elastoplastic bodies. This problem, however, is of considerable interest and has many important applications. The problem of low-cyclic fatigue of metals, which is now in a well de veloped state is one such application. The investigations within this area are actually directed to collecting experimental facts about repeated cyclic loadings, cf. [47J. Theoretical investigations within this area usually con sider the hysteretic loops and the construction of models of plasticity theory which are applicable to the analysis of repeated loadings and the study of the simplest dynamic problems. Another area of application of the theory of the vibration of elastoplas tic bodies is the applied theory of amplitude-dependent internal damping. Another name for this theory is the theory of energy dissipation in vibrat ing bodies. In accordance with the point of view of Davidenkov "internal damping" in many metals, alloys and structural materials under consider able stress presents exactly the effect of micro plastic deformations. There fore, it may be described by the methods of plasticity theory. This point of view is no doubt fruitful for the theory of energy dissipation in vibrating bodies, as it allows one to write down the constitutive equations appropri ate both for vibrational analysis of three-dimensional stress states and an investigation of nonharmonic deformation. These problems are known to be important for the theory of internal damping.

Perform Vibration Analysis HDC Human Development Consultants 2000

Group Theory and G-vector Spaces in Structural Analysis Đorđe Zloković 1989

Comparison Between the Measurement and Numerical Analysis of the Vibration Induced by the High-Speed Train □□□ 2005

Dynamics and Vibration Analyses of Gearbox in Wind Turbine Qingkai Han 2016-09-27 This book explores the dynamics and vibration properties of gearboxes, with a focus on geared rotor systems. It discusses mechanical theories, finite-element based simulations, experimental measurements and vibration signal processing techniques. It introduces the vibration-resonance calculation method for the geared rotor system in wind turbines and load sharing of the planetary gear train, and offers a method for calculating the vibrations of geared rotor systems under either internal excitations from gear sets or external loads transferred from wind loads. It also defines and elaborates on parameter optimization for planetary gear systems based on the torsional dynamics of wind-turbine geared rotor systems. Moreover, it describes experimental measurements of vibrations on the wind-turbine gearbox performed on the test rig and on site, and analyzes the vibration signals of different testing points, showing them in both time and frequency

domains. Lastly, it lists the gear coupling frequencies and fault characteristic frequencies from the vibrations of the gearbox housing. The technologies and results presented are valuable resources for use in dynamic design, vibration prediction and analysis of gearboxes and geared rotor systems in wind turbines as well as many other machines.

Train Internal Noise Due to Wheel-Rail Interaction Wenjun Luo 2019 In order to investigate different potentially effective methods to decrease the noise inside passenger trains, this article employs the acoustic-solid coupling theory and the finite element (FE)-statistical energy analysis (SEA) hybrid method to study the vibration response of the train body under wheel-rail excitation and the internal noise response caused by the vibration of the train body. The contribution of plates to the noise inside the train is also analyzed. The results show that the vibration of the floor has the greatest influence on the noise inside the train. Furthermore, compared with the FE method alone, the FE-SEA hybrid method shortens the computation time and improves the efficiency of the calculation.

Spur Gear Teeth Contact Analysis on Power-train Transmission Noise, Vibration and Harshness Zheng Li 2009

Vibration Analysis of a Split Path Gearbox Timothy L. Krantz 1995 Split path gearboxes can be attractive alternatives to the common planetary designs for rotorcraft, but because they have seen little use, they are relatively high risk designs. To help reduce the risk of fielding a rotorcraft with a split path gearbox, the vibration and dynamic characteristics of such a gearbox were studied. A mathematical model was developed by using the Lagrangian method, and it was applied to study the effect of three design variables on the natural frequencies and vibration energy of the gearbox. The first design variable, shaft angle, had little influence on the natural frequencies. The second variable, mesh phasing, had a strong effect on the levels of vibration energy, with phase angles of 0 deg and 180 deg producing low vibration levels. The third design variable, the stiffness of the shafts connecting the spur gears to the helical pinions, strongly influenced the natural frequencies of some of the vibration modes, including two of the dominant modes. We found that, to achieve the lowest level of vibration energy, the natural frequencies of these two dominant modes should be less than those of the main excitation sources. (AN).

Correlation and Contribution Analysis of Vibration Phenomenon's Affecting Ride Comfort Considering Power-train and Chassis Targets Jagannatha Chary Senapathy 2011

Railway Vibration Analysis on Light Rapit Transit Train 2004

Foundation Vibration Analysis John P. Wolf 2004 This book describes an alternative approach, based on the 'strength-of-materials' approach that has proved so successful in structural analysis. It employs tapered bars and beams, termed cones. This straightforward approach allows the analysis of most sites, and provides results of engineering accuracy obtained with conceptual clarity and physical insight.".

Wave Propagation for Train-Induced Vibrations

Vibrations and Stability Jon Juel Thomsen 2003-11-05 Lucidly uniting classical and modern topics of advanced vibration analysis, this text provides students with a background in elementary vibrations, especially with tools necessary for understanding and analyzing more complex dynamical phenomena that can be encountered in engineering and scientific practice. It progresses steadily from linear vibration theory over levels of nonlinearity to bifurcation analysis, global dynamics and chaotic vibrations. Readers gain analytical skills with simple models, learn to recognize nonlinear phenomena, and employ advanced tools such as perturbation analysis and bifurcation analysis. Enriching theory with relevant examples from real systems, this book meets the increasing interest in non-linear dynamics in engineering, applied mathematics, and physics. This edition includes a new chapter on the useful effects of fast vibrations and many new exercise problems.

Inerter and Its Application in Vibration Control Systems Michael Z. Q. Chen 2019-02-04 This book offers the first comprehensive introduction to the inerter, its successful application in Formula One racing, and other state-of-the-art applications in vibration control. It presents fundamental analysis results and design methods for inerter-based vibration control systems. Providing comprehensive information on the inerter, a

pioneering mechanical element invented by Prof. Malcolm C. Smith at Cambridge University in 2002, it will be of considerable interest to readers with a background in control theory, mechanical vibration or related subjects.

Foundation Vibration Analysis Using Simple Physical Models John P. Wolf 1994 This book provides simple physical models to represent the unbounded soil in time and frequency domain analysis. They do not supplant the more generally applicable rigorous methods, but rather supplement them. The physical models used consists of the following representations: cones based one-dimensional rod theory; lumped-parameter models with frequency-independent springs, dashpots, and masses; and prescribed wave patterns in the horizontal plane. The physical models thus offer a strength-of-materials approach to foundation dynamics.

Advanced Vibration Analysis S. Graham Kelly 2006-12-19 Delineating a comprehensive theory, Advanced Vibration Analysis provides the bedrock for building a general mathematical framework for the analysis of a model of a physical system undergoing vibration. The book illustrates how the physics of a problem is used to develop a more specific framework for the analysis of that problem. The author elucidates a general theory applicable to both discrete and continuous systems and includes proofs of important results, especially proofs that are themselves instructive for a thorough understanding of the result. The book begins with a discussion of the physics of dynamic systems comprised of particles, rigid bodies, and deformable bodies and the physics and mathematics for the analysis of a system with a single-degree-of-freedom. It develops mathematical models using energy methods and presents the mathematical foundation for the framework. The author illustrates the development and analysis of linear operators used in various problems and the formulation of the differential equations governing the response of a conservative linear system in terms of self-adjoint linear operators, the inertia operator, and the stiffness operator. The author focuses on the free response of linear conservative systems and the free response of non-self-adjoint systems. He explores three method for determining the forced response and approximate methods of solution for continuous systems. The use of the mathematical foundation and the application of the physics to build a framework for the modeling and development of the response is emphasized throughout the book. The presence of the framework becomes more important as the complexity of the system increases. The text builds the foundation, formalizes it, and uses it in a consistent fashion including application to contemporary research using linear vibrations.

Structural Vibration C. F. Beards 1996 This work examines a range of methods for controlling structural vibrations, both by damping and by excitation control. It describes the techniques for modelling structures in a way suitable for mathematical analysis, and includes worked examples which rei

Applied Theory of Vibration Isolation Systems K. V. Frolov 1990 A monograph based on years of study in the field of vibration isolation. This volume addresses the analysis and synthesis of vibration isolation systems as well as experimental methods.

Measurement and Analysis of Truck Power Train Vibration Randall L. Fox 1976

Vibration Analysis of Gas Turbine Rotors Srinivasa Rao Dokku 2018-09-20 Master's Thesis from the year 2016 in the subject Engineering - Mechanical Engineering, , language: English, abstract: The purpose of this report is to determine the lateral and torsional dynamic characteristics of the complete system under synchronous conditions of excitation and response. A damped natural response study was made in order to investigate the combined effect of oil film stiffness and damping coefficients on system damping and stability characteristics at all damped natural resonance speeds. An unbalance response analysis is also performed to study the system sensitivity. This study was performed to investigate the lateral vibration characteristics of the subject system in order to avoid vibration problems that might interfere with the smooth and reliable operation of the system. Total system studies are important in that often the coupling effects of marrying driver and driven

equipment result in resonant speeds that are not calculable when investigating the response of the separate components. Oil film stiffness and damping for all bearings must be properly considered in the system calculations along with the effective stiffness and damping of pedestal supports as required. The above effects are in the following calculation to ensure the proper calculation of resonant speeds.The following study concerns itself with the lateral analysis of gas turbine, load coupling, and 50 Hz/15.75Kva generator. This study reports the lateral natural frequencies and mode shapes calculated from the mass and stiffness distribution of the beam elements modeled using the DYROBES software. An unbalanced response analysis is also performed to study the system sensitivity. The significance of torsional vibration in high speed rotating machinery is well established. It is desirable to keep all torsional natural frequencies away from operating speed as well as twice the electrical frequency of the system. However, this is not always feasible and, therefore torsional criticals can be tolerated within these regions provided the response to excitation levels are low enough to keep the alternating shear stress within acceptable levels The following study concerns itself with the complete torsional analysis of gas turbine rotor including load coupling, gear box and 50Hz/15.75KVA generator rotor. This study reports the torsional natural frequencies, mode shapes and Campbell diagram by using transfer matrix method. The transient response shear stresses were also calculated for fault condition.
Mechanical and Structural Vibrations Demeter G. Fertis 1995-04-17 Covering the whole spectrum of vibration theory and itsapplications in both civil and mechanical engineering, Mechanicaland Structural Vibrations provides the most comprehensive treatmentof the subject currently available. Based on the author s manyyears of experience in both academe and industry, it is designed tofunction equally well as both a day-to-day working resource forpracticing engineers and a superior upper-level undergraduate orgraduate-level text. Features a quick-reference format that, Mechanical and StructuralVibrations gives engineers instant access to the specific theory orapplication they need. Saves valuable time ordinarily spent wadingthrough unrelated or extraneous material. And, while they arethoroughly integrated throughout the text, applications to bothcivil and mechanical engineering are organized into sections thatpermit the reader to reference only the material germane to his orher field. Students and teachers will appreciate the book's practical,real-world approach to the subject, its emphasis on simplicity andaccuracy of analytical techniques, and its straightforward,step-by-step delineation of all numerical methods used incalculating the dynamics and vibrations problems, as well as thenumerous examples with which the author illustrates those methods.They will also appreciate the many chapter-end practice problems(solutions appear in appendices) designed to help them rapidlydevelop mastery of all concepts and methods covered. Readers will find many versatile new concepts and analyticaltechniques not covered in other texts, including nonlinearanalysis, inelastic response of structural and mechanicalcomponents of uniform and variable stiffness, the "dynamic hinge,""dynamically equivalent systems," and other breakthrough tools andtechniques developed by the author and his collaborators. Mechanical and Structural Vibrations is both an excellent text forcourses in structural dynamics, dynamic systems, and engineeringvibration and a valuable tool of the trade for practicing engineersworking in a broad range of industries, from electronic packagingto aerospace. Timely, comprehensive, practical--a superior student text and anindispensable working resource for busy engineers Mechanical and Structural Vibrations is the first text to cover theentire spectrum of vibration theory and its applications in bothcivil and mechanical engineering. Written by an author with over aquarter century of experience as a teacher and practicing engineer,it is designed to function equally well as a working professionalresource and an upper-level undergraduate or graduate-level textfor courses in structural dynamics, dynamic systems, andengineering vibrations. Mechanical and Structural Vibrations: * Takes a practical, application-oriented approach to the subject * Features a quick-reference format that gives busy professionalsinstant access to the information needed for the task at hand * Walks readers, step-by-step, through the numerical methods

usedin calculating the dynamics and vibration problems * Introduces many cutting-edge concepts and analytical tools notcovered in other texts * Is packed with real-world examples covering everything from thestresses and strains on buildings during an earthquake to thoseaffecting a space craft during lift-off * Contains chapter-end problems--and solutions--that help studentsrapidly develop mastery of all important concepts and methodscovered * Is extremely well-illustrated and includes more than 300diagrams, tables, charts, illustrations, and more

Environmental Vibrations and Transportation Geodynamics Xuecheng Bian 2017-06-27 This book includes keynote presentations, invited speeches, and general session papers presented at the 7th International Symposium on Environmental Vibration and Transportation Geodynamics (formerly the International Symposium on Environmental Vibration), held from October 28 to 30, 2016 at Zhejiang University, Hangzhou, China. It discusses topics such as the dynamic and cyclic behaviors of soils, dynamic interaction of vehicle and transportation infrastructure; traffic-induced structure and soil vibrations and wave propagation; soil-structure dynamic interaction problems in transportation; environmental vibration analysis and testing; vehicle, machine and human-induced vibrations; monitoring, evaluation and control of traffic induced vibrations; transportation foundation deformation and deterioration induced by vibration; structural safety and serviceability of railways, metros, roadways and bridges; and application of geosynthetics in transportation infrastructure. It is a valuable resource for government managers, scientific researchers, and engineering professionals engaged in the field of geotechnical and transportation engineering.

Fundamentals of Structural Dynamics Zhihui Zhou 2021-06-08 Dynamics of Structural Dynamics explains foundational concepts and principles surrounding the theory of vibrations and gives equations of motion for complex systems. The book presents classical vibration theory in a clear and systematic way, detailing original work on vehicle-bridge interactions and wind effects on bridges. Chapters give an overview of structural vibrations, including how to formulate equations of motion, vibration analysis of a single-degree-of-freedom system, a multi-degree-of-freedom system, and a continuous system, the approximate calculation of natural frequencies and modal shapes, and step-by-step integration methods. Each chapter includes extensive practical examples and problems. This volume presents the foundational knowledge engineers need to understand and work with structural vibrations, also including the latest contributions of a globally leading research group on vehicle-bridge interactions and wind effects on bridges. Explains the foundational concepts needed to understand structural vibrations in high-speed railways Gives the latest research from a leading group working on vehicle-bridge interactions and wind effects on bridges Lays out routine procedures for generating dynamic property matrices in MATLAB© Presents a novel principle and rule to help researchers model time-varying systems Offers an efficient solution for readers looking to understand basic concepts and methods in vibration analysis

Noise Control Charles E. Wilson 1989 Textbook for engineering and science students in third or fourth year or at the graduate level. Covers the basics, generation and propagation, instrumentation and measurement, hearing protection, community noise, building design for noise control, industrial, highway and aircraft noise, and control and vibration. Annotation copyrighted by Book News, Inc., Portland, OR

Planetary Gear Train Microcrack Detection Using Vibration, Grayscale Images and Convolutional Neural Networks Suveen Emmanuel 2020 Planetary Gear Trains (PGT) are widely used in many industrial applications from wind turbines to automobile transmissions due to its high power to weight ratio. Since PGT can be subjected to faults and prone to failure over time, a non-intrusive method of monitoring the condition of PGT is required. Vibration-based machine learning algorithms are mostly used in fault diagnosis and classification in PGT, but due to the epicyclic motion of gears; vibration signals from one gear can get neutralized or amplified by signals from another gear. Identification of smaller cracks in the sun gear can be challenging when using vibration-based fault diagnosis methods due to cancellation effects from the planet pinions. In this paper, the application chosen was based

on the epicyclic drivetrain of a Chevy Volt hybrid car. The main research goal of this paper is to solve two research gaps; first is determining if extremely small elliptical cracks the size of 0.02 mm in length can be detected in vibration analysis and second is determining if sun gear faults neutralized by planetary gear faults can be detected. For that purpose 4 different health conditions of a planetary gear system were simulated using MSC ADAMS software. The conditions are a healthy PGT, PGT with a sun crack, PGT with a planet crack and a PGT with a sun and a planet crack. The joint forces at the exterior ring gear were extracted and a Blackman function was applied to convert to frequency domain values. Each of the frequency domain amplitude values was converted to pixel values in a grayscale image and the generated images were fed into a Convolutional Neural Network to train, validate and test the datasets. The results indicated that the proposed Grayscale – 2D CNN algorithm has an accuracy of 100% for the train and validation sets and 92% accuracy for the test set.

Machinery Malfunction Diagnosis and Correction Robert C. Eisenmann 1998 Specific, practical guidance for every individual involved with solving process machinery problems. The single source reference for explanations of fundamental machinery behavior, static and dynamic measurements, plus data acquisition, processing and interpretation. A variety of lateral and torsional analytical procedures, and physical tests are presented and discussed.

Vehicle Gearbox Noise and Vibration Jiri Tuma 2014-02-20 Advances in methods of gear design and the possibility ofpredicting the sound pressure level and life time of gearboxes andperfect instrumentation of test stands allows for the production ofa new generation of quiet transmission units. Current literature ongearbox noise and vibration is usually focused on a particularproblem such as gearbox design without a detailed description ofmeasurement methods for noise and vibration testing. Vehicle Gearbox Noise and Vibration: Measurement, SignalAnalysis, Signal Processing and Noise Reduction Measuresaddresses this need and comprehensively covers the sources of noiseand vibration in gearboxes and describes various methods of signalprocessing. It also covers gearing design, precision manufacturing,measuring the gear train transmission error, noise test on testingstands and also during vehicle pass-by tests. The analysis tools for gearbox inspection are based on thefrequency and time domain methods, including envelope and averagetoothmesh analysis. To keep the radiated noise under control, theeffect of load, the gear contact ratio and the tooth surfacemodification on noise and vibration are illustrated by measurementexamples giving an idea how to reduce transmission noise. Key features: Covers methods of processing noise and vibration signals Takes a practical approach to the subject and includes a casestudy covering how to successfully reduce transmission noise Describes the procedure for the measurement and calculation ofthe angular vibrations of gears during rotation Considers various signal processing methods including order analysis, synchronous averaging, Vold-Kalman order trackingfiltration and measuring the angular vibration Vehicle Gearbox Noise and Vibration: Measurement, SignalAnalysis, Signal Processing and Noise Reduction Measures is acomprehensive reference for designers of gearing systems and testengineers in the automotive industry and is also a useful source ofinformation for graduate students in automotive and noiseengineering.

Vibration Analysis of Rotors Chong-Won Lee 1993-06-30 This text is intended for use as an advanced course in either rotordynamics or vibration at the graduate level. This text has mostly grown out of the research work in my laboratory and the lectures given to graduate students in the Mechanical Engineering Department, KAIST. The text contains a variety of topics not normally found in rotordynamics or vibration textbooks. The text emphasizes the analytical aspects and is thus quite different from conventional rotordynamics texts; potential readers are expected to have a firm background in elementary rotordynamics and vibration. In most previously published rotordynamics texts, the behavior of simple rotors has been of a primary concern, while more realistic, multi-degree-f-freedom or continuous systems are seldom treated in a rigorous way, mostly due to the difficulty of a mathematical treatment of such complicated systems. When one wanted to gain a deep

insight into dynamic phenomena of complicated rotor systems, one has, in the past, either had to rely on computational techniques, such as the transfer matrix and finite element methods, or cautiously to extend ideas learned from simple rotors whose analytical solutions are readily available. The former methods are limited in the interpretation of results, since the calculations relate only to the simulated case, not to more general system behavior. Ideas learned from simple rotors can, fortunately, often be extended to many practical rotor systems, but there is of course no guarantee of their validity.

Study of Dominant Frequencies of Train-Induced Vibration and Analysis Method for Train Braking Effect □□□ 2007

Mechanical Vibrations and Condition Monitoring J C Jauregui 2020-03-01 Mechanical Vibrations and Condition Monitoring presents a collection of data and insights on the study of mechanical vibrations for the predictive maintenance of machinery. Seven chapters cover the foundations of mechanical vibrations, spectrum analysis, instruments, causes and effects of vibration, alignment and balancing methods, practical cases, and guidelines for the implementation of a predictive maintenance program. Readers will be able to use the book to make predictive maintenance decisions based on vibration analysis. This title will be useful to senior engineers and technicians looking for practical solutions to predictive maintenance problems. However, the book will also be useful to technicians looking to ground maintenance observations and decisions in the vibratory behavior of machine components. Presents data and insights into mechanical vibrations in condition monitoring and the predictive maintenance of industrial machinery Defines the key concepts related to mechanical vibration and its application for predicting mechanical failure Describes the dynamic behavior of most important mechanical components found in industrial machinery Explains fundamental concepts such as signal analysis and the Fourier transform necessary to understand mechanical vibration Provides analysis of most sources of failure in mechanical systems, affording an introduction to more complex signal analysis

Measurement and Analysis of Train Induced Ground Vibration Hugo P. Verhas 1977

Traffic Induced Environmental Vibrations and Controls He Xia 2013-01-01 The problem of environmental vibrations induced by moving traffic loads, is today increasingly one of the fundamental problems to be solved in traffic line planning and design, because they not only influence the living and working of human beings, but also make many high-tech projects unable to work normally. Since the effects of various transportation sources are different, and soil properties play a critical role in the propagation of vibrations, the problem of environmental vibrations is very complex. This book contains the research of the authors via fundamental theories, numerical simulations and field experiments. The main contents include the basic theory and analysis approaches in traffic-induced environmental vibrations, prediction and mitigation through ballast mats of rail traffic induced track-ground vibrations, railway traffic induced ground vibration and its prediction approaches, numerical modeling of vibrations induced by rail traffic in tunnels, investigation of train-induced ground vibrations using FEM and field experiments, human induced vibrations of pedestrian bridges and their prevention, prediction of environmental vibration from underground trains, numerical evaluation on train-induced ground vibration around high-speed railway viaducts, vibration isolation by ground barriers, environmental vibration induced by elevated railway traffic, and train induced vibration in elevated railway stations.

Structural Vibration Analysis C. F. Beards 1983-01-01

Vibration Analysis Robert K. Vierck 1979

Noise and Torsional Vibration Analysis of Hybrid Vehicles Xiaolin Tang 2022-06-01 Thanks to the potential of reducing fuel consumption and emissions, hybrid electric vehicles (HEVs) have been attracting more and more attention from car manufacturers and researchers. Due to involving two energy sources, i.e., engine and battery, the powertrain in HEVs is a complicated electromechanical coupling system that generates noise and vibration different from that of a traditional vehicle. Accordingly, it is very important to explore the noise and vibration characteristics of HEVs. In this book, a hybrid vehicle with two motors is taken as an

example, consisting of a compound planetary gear set (CPGS) as the power-split device, to analyze the noise and vibration characteristics. It is specifically intended for graduates and anyone with an interest in the electrification of full hybrid vehicles. The book begins with the research background and significance of the HEV. The second chapter presents the structural description and working principal of the target hybrid vehicle. Chapter 3 highlights the noise, vibration, and harshness (NVH) tests and corresponding analysis of the hybrid powertrain. Chapter 4 provides transmission system parameters and meshing stiffness calculation. Chapter 5 discusses the mathematical modeling and analyzes torsional vibration (TV) of HEVs. Finally, modeling of the hybrid powertrain with ADAMS is given in Chapter 6.

Analysis of Synchronous Belt Vibration in Automotive Valve Train Naohiko Mizuno 1988

Assessment of the Impact of Camshaft Machining Inputs on Valve Train Sound Quality Using Vibration Analysis Matthew C. Daws 2002