

Design And Simulation Of Rail Vehicles Ground Vehicle Engineering By Spiryagin Maksym Cole Colin Sun Yan Quan Mcclanachan 2014 Hardcover

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Vehicle Dynamics - Rao V. Dukkipati 2000
Growing worldwide populations increasingly require faster, safer, and more efficient transportation systems. These needs have led to a renewed interest in high-speed guided ground transportation technology, inspired considerable research, and instigated the development of better analytical and experimental tools. A very significant body of knowledge currently exists, but has primarily remained scattered throughout the literature. *Vehicle Dynamics* consolidates information from a wide spectrum of sources in the area of guided ground transportation. Each chapter provides a concise, thorough statement of the fundamental theory, followed by illustrative worked examples and exercises. The author also includes a variety of unsolved problems designed to amplify and extend the theory and provide problem-solving experience. The subject of guided ground transportation is vast, but this book brings together the core topics, providing in-depth treatments of topics

ranging from system classification, analysis, and response to lading dynamics and rail, air cushion, and maglev systems. In doing so, *Vehicle Dynamics* offers a singular opportunity for readers to build the solid background needed for solving practical vehicle dynamics problems or pursuing more advanced or specialized studies. [Ground Vehicle Dynamics](#) - Karl Popp 2010-03-16
Ground Vehicle Dynamics is devoted to the mathematical modelling and dynamical analysis of ground vehicle systems composed of the vehicle body, the guidance and suspension devices and the corresponding guideway. Automobiles on uneven roads and railways on flexible tracks are prominent representatives of ground vehicle systems. All these different kinds of systems are treated in a common way by means of analytical dynamics and control theory. In addition to a detailed modelling of vehicles as multibody systems, the contact theory for rolling wheels and the modelling of guideways by finite element systems as well as stochastic processes

are presented. As a particular result of this integrated approach the state equations of the global systems are obtained including the complete interactions between the subsystems considered as independent modules. The fundamentals of vehicle dynamics for longitudinal, lateral and vertical motions and vibrations of automobiles and railways are discussed in detail.

The Manchester Benchmarks for Rail Vehicle Simulation - S. Iwnicki 2017-11-01

This volume contains the results of the Manchester Benchmarking exercise for railway vehicle dynamics simulation packages. Five of the main computer packages currently used for this purpose were examined in the exercise and the results are presented in the form of tables and graphs.

Dynamics of Vehicles on Roads and Tracks - Maksym Spiryagin 2021-03-19

The International Symposium on Dynamics of Vehicles on Roads and Tracks is the leading

international gathering of scientists and engineers from academia and industry in the field of ground vehicle dynamics to present and exchange their latest innovations and breakthroughs. Established in Vienna in 1977, the International Association of Vehicle System Dynamics (IAVSD) has since held its biennial symposia throughout Europe and in the USA, Canada, Japan, South Africa and China. The main objectives of IAVSD are to promote the development of the science of vehicle dynamics and to encourage engineering applications of this field of science, to inform scientists and engineers on the current state-of-the-art in the field of vehicle dynamics and to broaden contacts among persons and organisations of the various countries engaged in scientific research and development in the field of vehicle dynamics and related areas. IAVSD 2017, the 25th Symposium of the International Association of Vehicle System Dynamics was hosted by the Centre for Railway Engineering at Central Queensland University,

Rockhampton, Australia in August 2017. The symposium focused on the following topics related to road and rail vehicles and trains: dynamics and stability; vibration and comfort; suspension; steering; traction and braking; active safety systems; advanced driver assistance systems; autonomous road and rail vehicles; adhesion and friction; wheel-rail contact; tyre-road interaction; aerodynamics and crosswind; pantograph-catenary dynamics; modelling and simulation; driver-vehicle interaction; field and laboratory testing; vehicle control and mechatronics; performance and optimization; instrumentation and condition monitoring; and environmental considerations. Providing a comprehensive review of the latest innovative developments and practical applications in road and rail vehicle dynamics, the 213 papers now published in these proceedings will contribute greatly to a better understanding of related problems and will serve as a reference for researchers and engineers active in this

specialised field.

Driveline Systems of Ground Vehicles -

Alexandr F. Andreev 2010-01-29

"With this book, Prof. Dr. Vantsevich brings a tremendous contribution to the field of Automotive Transmission and Driveline Engineering, including his innovative methods for optimum driveline synthesis, as well as his experience with the development of various hardware solutions, from the basic limited slip differentials to the most sophisticated mechatronic systems." —Dr.-Ing. Mircea Gradu Director, Transmission and Driveline Engineering Head, Virtual Analysis Tools Chrysler Group LLC Now that vehicles with four and more driving wheels are firmly ensconced in the consumer market, they must provide energy/fuel-saving benefits and improved operational quality including terrain mobility, traction and velocity properties, turnability, and stability of motion. A first-of-its-kind resource, Driveline Systems of Ground Vehicles: Theory and Design presents a

comprehensive and analytical treatment of driveline research, design, and tests based on energy efficiency, vehicle dynamics, and operational properties requirements. This volume addresses fundamental engineering problems including how to investigate the effect of different driveline systems on the properties of vehicles and how to determine the optimal characteristics of the driveline system and its power-dividing units (PDUs) and design it for a specific vehicle to ensure high level of vehicle dynamics, energy efficiency, and performance. The authors develop an analytical apparatus for math modeling of driveline systems that can be compiled from different types of PDUs. They also introduce methodologies for the synthesis of optimal characteristics of PDUs for different types of vehicles. Structured to be useful to engineers of all levels of experience, university professors and graduate students, the book is based on the R&D projects conducted by the authors. It explores intriguing engineering dilemmas such as

how to achieve higher energy and fuel efficiency by driving either all the wheels or not all the wheels, solve oversteering issues by managing wheel power distribution, and many other technical problems.

Hearings - United States. Congress. House 1966

The Shock and Vibration Digest - 1986

Railway Transportation Systems - Christos N. Pyrgidis 2016-04-21

Incorporates More Than 25 Years of Research and Experience *Railway Transportation Systems: Design, Construction and Operation* presents a comprehensive overview of railway passenger and freight transport systems, from design through to construction and operation. It covers the range of railway passenger systems, from conventional and high speed inter *Design and Simulation of Heavy Haul Locomotives and Trains* - Maksym Spiryagin 2016-10-03

With the increasing demands for safer freight trains operating with higher speed and higher loads, it is necessary to implement methods for controlling longer, heavier trains. This requires a full understanding of the factors that affect their dynamic performance. Simulation techniques allow proposed innovations to be optimised before introducing them into the operational railway environment. Coverage is given to the various types of locomotives used with heavy haul freight trains, along with the various possible configurations of those trains. This book serves as an introductory text for college students, and as a reference for engineers practicing in heavy haul rail network design,

The Dynamics of Vehicles on Roads and Tracks

- Martin Rosenberger 2016-03-30

The IAVSD Symposium is the leading international conference in the field of ground vehicle dynamics, bringing together scientists and engineers from academia and industry. The biennial IAVSD symposia have been held in

internationally renowned locations. In 2015 the 24th Symposium of the International Association for Vehicle System Dynamics (IAVSD) was held in Graz, Austria, from 17th to 21st of August 2015. The symposium was hosted by VIRTUAL VEHICLE Research Center, in cooperation with the Graz and Vienna Universities of Technology, and the industrial partners AVL, Magna Steyr, and Siemens. 170 papers (oral and poster presentations) were presented at the symposium and the papers are now published in these proceedings. The papers review the latest research developments and practical applications in highly relevant areas of vehicle dynamics on roads and tracks, and may serve as a reference for researchers and engineers active in the field of vehicle system dynamics.

Road Vehicle Dynamics - Georg Rill 2020-04-01

Road Vehicle Dynamics: Fundamentals and Modeling with MATLAB®, Second Edition combines coverage of vehicle dynamics concepts with MATLAB v9.4 programming routines and

results, along with examples and numerous chapter exercises. Improved and updated, the revised text offers new coverage of active safety systems, rear wheel steering, race car suspension systems, airsprings, four-wheel drive, mechatronics, and other topics. Based on the lead author's extensive lectures, classes, and research activities, this unique text provides readers with insights into the computer-based modeling of automobiles and other ground vehicles. Instructor resources, including problem solutions, are available from the publisher.

Report on the High Speed Ground Transportation Act - 1969

Rail Vehicle Mechatronics - Maksym Spiryagin 2021-12

"This unique and up-to-date work surveys the use of mechatronics in rail vehicles, notably traction, braking, communications, data sharing, and control. The results include improved safety, comfort, and fuel efficiency. Mechatronic systems

are a key element in modern rail vehicle design and operation. Starting with an overview of mechatronic theory, the book goes on to cover topics including modeling of mechanical and electrical systems for rail vehicles, open and closed loop control systems, sensors, actuators and microprocessors. Modern simulation techniques and examples are included throughout, and numerical experiments and developed models for railway application are presented and explained. Case studies are used, alongside practical examples, to ensure that the reader can apply mechatronic theory to real world conditions. These case studies include modeling of a hybrid locomotive and simplified models of railway vehicle lateral dynamics for suspension control studies. Rail Vehicle Mechatronics provides current and in-depth content for design engineers, operations managers, systems engineers and technical consultants world-wide, working with freight, passenger, and urban transit railway systems"--

Discrete Choice Methods with Simulation -

Kenneth Train 2009-07-06

This book describes the new generation of discrete choice methods, focusing on the many advances that are made possible by simulation. Researchers use these statistical methods to examine the choices that consumers, households, firms, and other agents make. Each of the major models is covered: logit, generalized extreme value, or GEV (including nested and cross-nested logits), probit, and mixed logit, plus a variety of specifications that build on these basics. Simulation-assisted estimation procedures are investigated and compared, including maximum simulated likelihood, method of simulated moments, and method of simulated scores. Procedures for drawing from densities are described, including variance reduction techniques such as antithetics and Halton draws. Recent advances in Bayesian procedures are explored, including the use of the Metropolis-Hastings algorithm and its variant

Gibbs sampling. The second edition adds chapters on endogeneity and expectation-maximization (EM) algorithms. No other book incorporates all these fields, which have arisen in the past 25 years. The procedures are applicable in many fields, including energy, transportation, environmental studies, health, labor, and marketing.

Wheel-Rail Interface Handbook - R. Lewis

2009-09-25

Many of the engineering problems of particular importance to railways arise at interfaces and the safety-critical role of the wheel/rail interface is widely acknowledged. Better understanding of wheel/rail interfaces is therefore critical to improving the capacity, reliability and safety of the railway system. Wheel-rail interface handbook is a one-stop reference for railway engineering practitioners and academic researchers. Part one provides the fundamentals of contact mechanics, wear, fatigue and lubrication as well as state-of-the-art research

and emerging technologies related to the wheel/rail interface and its management. Part two offers an overview of industrial practice from several different regions of the world, thereby providing an invaluable international perspective with practitioners' experience of managing the wheel/rail interface in a variety of environments and circumstances. This comprehensive volume will enable practising railway engineers, in whatever discipline of railway engineering – infrastructure, vehicle design and safety, and so on – to enhance their understanding of wheel/rail issues, which have a major influence on the running of a reliable, efficient and safe railway. One-stop reference on the important topic of wheel rail-interfaces Presents the fundamentals of contact mechanics, wear, fatigue and lubrication Examines state-of-the-art research and emerging technologies related to wheel-rail interface and its management

Handbook of Railway Vehicle Dynamics -
Simon Iwnicki 2006-05-22

Understanding the dynamics of railway vehicles, and indeed of the entire vehicle-track system, is critical to ensuring safe and economical operation of modern railways. As the challenges of higher speed and higher loads with very high levels of safety require ever more innovative engineering solutions, better understanding of the technical issues a

Track Design Handbook for Light Rail Transit - 2012

TCRP report 155 provides guidelines and descriptions for the design of various common types of light rail transit (LRT) track. The track structure types include ballasted track, direct fixation ("ballastless") track, and embedded track. The report considers the characteristics and interfaces of vehicle wheels and rail, tracks and wheel gauges, rail sections, alignments, speeds, and track moduli. The report includes chapters on vehicles, alignment, track structures, track components, special track work, aerial structures/bridges, corrosion control, noise and

vibration, signals, traction power, and the integration of LRT track into urban streets.

Control Applications of Vehicle Dynamics - Jingsheng Yu 2021-12-20

This book presents essential knowledge of car vehicle dynamics and control theory with NI LabVIEW software product application, resulting in a practical yet highly technical guide for designing advanced vehicle dynamics and vehicle system controllers. Presenting a clear overview of fundamental vehicle dynamics and vehicle system mathematical models, the book covers linear and non-linear design of model based controls such as wheel slip control, vehicle speed control, path following control, vehicle stability and rollover control, stabilization of vehicle-trailer system. Specific applications to autonomous vehicles are described among the methods. It details the practical applications of Kalman-Bucy filtering and the observer design for sensor signal estimation, alongside lateral vehicle dynamics and vehicle rollover dynamics.

The book also discusses high level controllers, alongside a clear explanation of basic control principles for regenerative braking in both electric and hybrid vehicles, and wheel torque vectoring systems. Concrete LabVIEW simulation examples of how the models and controls are used in representative applications, along with software algorithms and LabVIEW block diagrams are illustrated. It will be of interest to engineering students, automotive engineering students and automotive engineers and researchers.

Advances in Dynamics of Vehicles on Roads and Tracks - Matthijs Klomp 2020-02-14

This book gathers together papers presented at the 26th IAVSD Symposium on Dynamics of Vehicles on Roads and Tracks, held on August 12 - 16, 2019, at the Lindholmen Conference Centre in Gothenburg, Sweden. It covers cutting-edge issues related to vehicle systems, including vehicle design, condition monitoring, wheel and rail contact, automated driving systems, suspension and ride analysis, and many more

topics. Written by researchers and practitioners, the book offers a timely reference guide to the field of vehicle systems dynamics, and a source of inspiration for future research and collaborations.

Handbook of Railway Vehicle Dynamics, Second Edition - Simon Iwnicki 2019-11-14
Handbook of Railway Vehicle Dynamics, Second Edition, provides expanded, fully updated coverage of railway vehicle dynamics. With chapters by international experts, this work surveys the main areas of rolling stock and locomotive dynamics. Through mathematical analysis and numerous practical examples, it builds a deep understanding of the wheel-rail interface, suspension and suspension component design, simulation and testing of electrical and mechanical systems, and interaction with the surrounding infrastructure, and noise and vibration. Topics added in the Second Edition include magnetic levitation, rail vehicle aerodynamics, and advances in traction and

braking for full trains and individual vehicles.

Noise and Vibration Mitigation for Rail Transportation Systems - Jens C.O. Nielsen 2014-11-05

The book reports on the 11th International Workshop on Railway Noise, held on 9 – 13 September, 2013, in Uddevalla, Sweden. The event, which was jointly organized by the Competence Centre Chalmers Railway Mechanics (CHARMEC) and the Departments of Applied Mechanics and Applied Acoustics at Chalmers University of Technology in Gothenburg, Sweden, covered a broad range of topics in the field of railway noise and vibration, including: prospects, legal regulations and perceptions; wheel and rail noise; prediction, measurements and monitoring; ground-borne vibration; squeal noise and structure-borne noise; and aerodynamic noise generated by high-speed trains. Further topics included: resilient track forms; grinding, corrugation and roughness; and interior noise and sound barriers. This book, which consists of a

collection of peer-reviewed papers originally submitted to the workshop, not only provides readers with an overview of the latest developments in the field, but also offers scientists and engineers essential support in their daily efforts to identify, understand and solve a number of problems related to railway noise and vibration, and to achieve their ultimate goal of reducing the environmental impact of railway systems.

COMPRAIL - C. A. Brebbia 2016-12-14

The papers presented in this volume aim to update the use of advanced systems, promoting their general awareness throughout the management, design, manufacture and operation of railways and other emerging passenger, freight and transit systems. The book particularly emphasizes the use of computer systems in advanced railway engineering. Topics covered include: Communications and signalling; Operations quality; Energy supply and consumption; Monitoring and maintenance;

Computer simulations Planning and policy; Operational planning; Safety and security; Rescheduling; Timetable planning.

Design and Simulation of Rail Vehicles -

Maksym (Central Queensland University Spiryagin, Rockhampton Australia) 2017-11-22
Keep Up with Advancements in the Field of Rail Vehicle Design A thorough understanding of the issues that affect dynamic performance, as well as more inventive methods for controlling rail vehicle dynamics, is needed to meet the demands for safer rail vehicles with higher speed and loads. Design and Simulation of Rail Vehicles examines the field of rail vehicle design, maintenance, and modification, as well as performance issues related to these types of vehicles. This text analyzes rail vehicle design issues and dynamic responses, describes the design and features of rail vehicles, and introduces methods that address the operational conditions of this complex system. Progresses from Basic Concepts and Terminology to Detailed

Explanations and Techniques Focused on both non-powered and powered rail vehicles ♦ freight and passenger rolling stock, locomotives, and self-powered vehicles used for public transport ♦ this book introduces the problems involved in designing and modeling all types of rail vehicles. It explores the applications of vehicle dynamics, train operations, and track infrastructure maintenance. It introduces the fundamentals of locomotive design, multibody dynamics, and longitudinal train dynamics, and discusses co-simulation techniques. It also highlights recent advances in rail vehicle design, and contains applicable standards and acceptance tests from around the world. ♦ Includes multidisciplinary simulation approaches ♦ Contains an understanding of rail vehicle design and simulation techniques ♦ Establishes the connection between theory and many simulation examples ♦ Presents simple to advanced rail vehicle design and simulation methodologies

Design and Simulation of Rail

Vehicles serves as an introductory text for graduate or senior undergraduate students, and as a reference for practicing engineers and researchers investigating performance issues related to these types of vehicles.

Hearings - United States. Congress. House. Committee on Interstate and Foreign Commerce 1968

Hearings, Reports and Prints of the House Committee on Interstate and Foreign Commerce - United States. Congress. House. Committee on Interstate and Foreign Commerce 1968

Research and Development for High Speed Ground Transportation - United States. Panel on High Speed Ground Transportation 1967

Design and Simulation of Rail Vehicles - Maksym Spiryagin 2014-05-13

Keep Up with Advancements in the Field of Rail Vehicle Design A thorough understanding of the

issues that affect dynamic performance, as well as more inventive methods for controlling rail vehicle dynamics, is needed to meet the demands for safer rail vehicles with higher speed and loads. Design and Simulation of Rail Vehicles examines the field of rail vehicle design, maintenance, and modification, as well as performance issues related to these types of vehicles. This text analyzes rail vehicle design issues and dynamic responses, describes the design and features of rail vehicles, and introduces methods that address the operational conditions of this complex system. Progresses from Basic Concepts and Terminology to Detailed Explanations and Techniques Focused on both non-powered and powered rail vehicles—freight and passenger rolling stock, locomotives, and self-powered vehicles used for public transport—this book introduces the problems involved in designing and modeling all types of rail vehicles. It explores the applications of vehicle dynamics, train operations, and track

infrastructure maintenance. It introduces the fundamentals of locomotive design, multibody dynamics, and longitudinal train dynamics, and discusses co-simulation techniques. It also highlights recent advances in rail vehicle design, and contains applicable standards and acceptance tests from around the world. • Includes multidisciplinary simulation approaches • Contains an understanding of rail vehicle design and simulation techniques • Establishes the connection between theory and many simulation examples • Presents simple to advanced rail vehicle design and simulation methodologies Design and Simulation of Rail Vehicles serves as an introductory text for graduate or senior undergraduate students, and as a reference for practicing engineers and researchers investigating performance issues related to these types of vehicles.

Inventory of advanced energy technologies and energy conservation research and development, 1976-1978 - Oak Ridge National

Laboratory 1979

Transportation - 1977-12-21

Report on the High Speed Ground Transportation Act - United States.
Department of Transportation

Research and Development for High Speed Ground Transportation, Report of the Panel on High Speed Ground Transportation Convened by the Commerce Technical Advisory Board; March 1967 - United States.
Department of Commerce 1967

Report on the High Speed Ground Transportation Act of 1965 - 1971

Rail Vehicle Mechatronics - Maksym Spiryagin
2021-12-09

This unique and up-to-date work surveys the use of mechatronics in rail vehicles, notably traction,

braking, communications, data sharing, and control. The results include improved safety, comfort, and fuel efficiency. Mechatronic systems are a key element in modern rail vehicle design and operation. Starting with an overview of mechatronic theory, the book goes on to cover topics including modeling of mechanical and electrical systems for rail vehicles, open and closed loop control systems, sensors, actuators and microprocessors. Modern simulation techniques and examples are included throughout, and numerical experiments and developed models for railway application are presented and explained. Case studies are used, alongside practical examples, to ensure that the reader can apply mechatronic theory to real world conditions. These case studies include modeling of a hybrid locomotive and simplified models of railway vehicle lateral dynamics for suspension control studies. Rail Vehicle Mechatronics provides current and in-depth content for design engineers, operations

managers, systems engineers and technical consultants world-wide, working with freight, passenger, and urban transit railway systems.

The Dynamics of Vehicles on Roads and on Tracks - Z.Y. Shen 2021-07-29

This book develops a continuous look-ahead preview control scheme and applies the scheme to the well known quarter car model. It particularly focuses on the active and semi-active control of the vehicle systems.

Automotive Accident Reconstruction -

Donald E. Struble 2020-01-24

This fully updated edition presents practices and principles applicable for the reconstruction of automobile and commercial truck crashes. Like the First Edition, it starts at the very beginning with fundamental principles, information sources, and data gathering and inspection techniques for accident scenes and vehicles. It goes on to show how to analyze photographs and crash test data. The book presents tire fundamentals and shows how to use them in spreadsheet-based reverse

trajectory analysis. Such methods are also applied to reconstructing rollover crashes. Impacts with narrow fixed objects are discussed. Impact mechanics, structural dynamics, and conservation-based reconstruction methods are presented. The book contains a comprehensive treatment of crush energy and how to develop structural stiffness properties from crash test data. Computer simulations are reviewed and discussed. Extensively revised, this edition contains new material on side pole impacts. It has entirely new chapters devoted to low-speed impacts, downloading electronic data from vehicles, deriving structural stiffness in side impacts, and incorporating electronic data into accident reconstructions

The Dynamics of Vehicles on Roads and on Tracks - Robert Frohling 2021-07-01

These proceedings provide an authoritative source of information in the field of suspension design, vehicle-infrastructure interaction, mechatronics and vehicle control systems for

road as well as rail vehicles. The research presented includes modelling and simulation.

Dynamics of Vehicles on Roads and Tracks

Vol 2 - Maksym Spiryagin 2017-12-06

The International Symposium on Dynamics of Vehicles on Roads and Tracks is the leading international gathering of scientists and engineers from academia and industry in the field of ground vehicle dynamics to present and exchange their latest innovations and breakthroughs. Established in Vienna in 1977, the International Association of Vehicle System Dynamics (IAVSD) has since held its biennial symposia throughout Europe and in the USA, Canada, Japan, South Africa and China. The main objectives of IAVSD are to promote the development of the science of vehicle dynamics and to encourage engineering applications of this field of science, to inform scientists and engineers on the current state-of-the-art in the field of vehicle dynamics and to broaden contacts among persons and organisations of the various

countries engaged in scientific research and development in the field of vehicle dynamics and related areas. IAVSD 2017, the 25th Symposium of the International Association of Vehicle System Dynamics was hosted by the Centre for Railway Engineering at Central Queensland University, Rockhampton, Australia in August 2017. The symposium focused on the following topics related to road and rail vehicles and trains: dynamics and stability; vibration and comfort; suspension; steering; traction and braking; active safety systems; advanced driver assistance systems; autonomous road and rail vehicles; adhesion and friction; wheel-rail contact; tyre-road interaction; aerodynamics and crosswind; pantograph-catenary dynamics; modelling and simulation; driver-vehicle interaction; field and laboratory testing; vehicle control and mechatronics; performance and optimization; instrumentation and condition monitoring; and environmental considerations. Providing a comprehensive review of the latest innovative

developments and practical applications in road and rail vehicle dynamics, the 213 papers now published in these proceedings will contribute greatly to a better understanding of related problems and will serve as a reference for researchers and engineers active in this specialised field. Volume 2 contains 135 papers under the subject heading Rail.

Modeling and Simulation in Engineering - Catalin Alexandru 2012-03-07

This book provides an open platform to establish and share knowledge developed by scholars, scientists, and engineers from all over the world, about various applications of the modeling and simulation in the design process of products, in various engineering fields. The book consists of 12 chapters arranged in two sections (3D Modeling and Virtual Prototyping), reflecting the multidimensionality of applications related to modeling and simulation. Some of the most recent modeling and simulation techniques, as well as some of the most accurate and

sophisticated software in treating complex systems, are applied. All the original contributions in this book are jointed by the basic principle of a successful modeling and simulation process: as complex as necessary, and as simple as possible. The idea is to manipulate the simplifying assumptions in a way that reduces the complexity of the model (in order to make a real-time simulation), but without altering the precision of the results.

Advances in Dynamics of Vehicles on Roads and Tracks II - Anna Orlova 2022-08-08

This book offers a snapshot of the latest research and developments in road and railway vehicle dynamics. Gathering peer-reviewed contributions to the 27th Symposium of the International Association of Vehicle System Dynamics (IAVSD), held online on August 17–19, 2021, from Saint Petersburg, Russia, it offers extensive information for both researchers and professionals in the field of ground vehicle dynamics, control and design. It covers cutting-

edge methods and solutions for solving ground vehicle system dynamics-related problems, concerning control and monitoring, performance, safety and braking of road and rail vehicles, including electric and autonomous ones. Further, it reports on significant advances in vehicle design, and important applications to improve ride comfort. Overall, the book provides academics and professional with a timely reference guide on theories and methods to understand, analyze and improve vehicle stability and dynamics in a broad range of different operating conditions. Chapter "Experimental Validation of a Semi-physical Modelling Approach of the Influence of Tyre Rotation on the Vertical Tyre Force Transmission and Tyre Kinematics" is available open access under a Creative Commons Attribution 4.0 International License

via link.springer.com.

Rail Vehicle Dynamics - Klaus Knothe
2016-11-23

This book on the dynamics of rail vehicles is developed from the manuscripts for a class with the same name at TU Berlin. It is directed mainly to master students with pre-knowledge in mathematics and mechanics and engineers that want to learn more. The important phenomena of the running behaviour of rail vehicles are derived and explained. Also recent research results and experience from the operation of rail vehicles are included. One focus is the description of the complex wheel-rail contact phenomena that are essential to understand the concept of running stability and curving. A reader should in the end be able to understand the background of simulation tools that are used by the railway industry and universities today.