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Dynamics in Engineering Practice
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 Dynamic Modeling and Control of Engineering Systems
 Proceedings of the 32nd IMAC, A Conference and Exposition on Structural Dynamics, 2014
 Identification and Control of Mechanical Systems
 Interpretability Issues in Fuzzy Modeling

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MICHAEL LAYLAH

Dynamics in Engineering Practice Springer Nature

A thorough study of the oscillatory and transient motion of mechanical and structural systems, *Engineering Vibrations, Second Edition* presents vibrations from a unified point of view, and builds on the first edition with additional chapters and sections that contain more advanced, graduate-level topics. Using numerous examples and case studies to r

Linear State-Space Control Systems CRC Press

Observing that most books on engineering dynamics left students lacking and failing to grasp the general nature of dynamics in engineering practice, the authors of *Dynamics in Engineering Practice, Eleventh Edition* focused their efforts on remedying the problem. This text shows readers how to develop and analyze models to predict motion. While esta

Space Vehicle Dynamics and Control BoD - Books on Demand

This unique textbook takes the student from the initial steps in modeling a dynamic system through development of the mathematical models needed for feedback control. The generously-illustrated, student-friendly text focuses on fundamental theoretical development rather than the application of commercial software. Practical details of machine design are included to motivate the non-mathematically inclined student.

Nonlinear Dynamics of Structures, Systems and Devices AIAA

Given the risk of earthquakes in many countries, knowing how structural dynamics can be applied to earthquake engineering of structures, both in theory and practice, is a vital aspect of improving the safety of buildings and structures. It can also reduce the number of deaths and injuries and the amount of property damage. The book begins by discussing free vibration of single-degree-of-freedom (SDOF) systems, both damped and undamped, and forced vibration (harmonic force) of SDOF systems. Response to periodic dynamic loadings and impulse loads are also discussed, as are two degrees of freedom linear system response methods and free vibration of multiple degrees of freedom. Further chapters cover time history response by natural mode superposition, numerical solution methods for natural frequencies and mode shapes and differential quadrature, transformation and Finite Element methods for vibration problems. Other topics such as earthquake ground motion, response spectra and earthquake analysis of linear systems are discussed.

Structural dynamics of earthquake engineering: theory and application using Mathematica and Matlab provides civil and structural engineers and students with an understanding of the dynamic response of structures to earthquakes and the common analysis techniques employed to evaluate these responses. Worked examples in Mathematica and Matlab are given. Explains the dynamic response of structures to earthquakes including periodic dynamic loadings and impulse loads Examines common analysis techniques such as natural mode superposition, the finite element method and numerical solutions Investigates this important topic in terms of both theory and practise with the inclusion of practical exercise and diagrams

An Integrative Approach Springer Nature

Annotation Consisting primarily of contributions written by engineers from Europe, Asia, and the US, this volume provides a general methodology for describing, solving, and analyzing discontinuous systems. The focus is on mechanical engineering problems where clearances, piecewise stiffness, intermittent contact, variable friction, or other forms of discontinuity occur. Practical applications include vibration absorbers, percussive drilling of hard materials, and dynamics of metal cutting. Of likely interest to new and experienced researchers working in the field of applied mathematics and physics, mechanical and civil engineering, and manufacturing. Lacks a subject index. Annotation copyrighted by Book News, Inc., Portland, OR.

MODERN CONTROL ENGINEERING Prentice Hall

Using MATLAB® and Simulink® to perform symbolic, graphical, numerical, and simulation tasks,

Modeling and Analysis of Dynamic Systems provides a thorough understanding of the mathematical modeling and analysis of dynamic systems. It meticulously covers techniques for modeling dynamic systems, methods of response analysis, and vibration and control systems. After introducing the software and essential mathematical background, the text discusses linearization and different forms of system model representation, such as state-space form and input-output equation. It then explores translational, rotational, mixed mechanical, electrical, electromechanical, pneumatic, liquid-level, and thermal systems. The authors also analyze the time and frequency domains of dynamic systems and describe free and forced vibrations of single and multiple degree-of-freedom systems, vibration suppression, modal analysis, and vibration testing. The final chapter examines aspects of control system analysis, including stability analysis, types of control, root locus analysis, Bode plot, and full-state feedback. With much of the material rigorously classroom tested, this textbook enables undergraduate students to acquire a solid comprehension of the subject. It provides at least one example of each topic, along with multiple worked-out examples for more complex topics. The text also includes many exercises in each chapter to help students learn firsthand how a combination of ideas can be used to analyze a problem.

Applied Nonlinear Dynamics and Chaos of Mechanical Systems with Discontinuities John Wiley & Sons

The control of vibrating systems is a significant issue in the design of aircraft, spacecraft, bridges and high-rise buildings. This 2001 book discusses the control of vibrating systems, integrating structural dynamics, vibration analysis, modern control and system identification. Integrating these subjects is an important feature in that engineers will need only one book, rather than several texts or courses, to solve vibration control problems. The book begins with a review of basic mathematics needed to understand subsequent material. Chapters then cover more recent and valuable developments in aerospace control and identification theory, including virtual passive control, observer and state-space identification, and data-based controller synthesis. Many practical issues and applications are addressed, with examples showing how various methods are applied to real systems. Some methods show the close integration of system identification and control theory from the state-space perspective, rather than from the traditional input-output model perspective of adaptive control. This text will be useful for advanced undergraduate and beginning graduate students in aerospace, mechanical and civil engineering, as well as for practising engineers.

Introduction to Mechanical Vibrations Springer Science & Business Media

This first of three volumes from the inaugural NODYCON, held at the University of Rome, in February of 2019, presents papers devoted to Nonlinear Dynamics of Structures, Systems and Devices. The collection features both well-established streams of research as well as novel areas and emerging fields of investigation. Topics in Volume I include multi-scale dynamics: coexistence of multiple time/space scales, large system dynamics; dynamics of structures/industrial machines/equipment/facilities (e.g., cable transportation systems, suspension bridges, cranes, vehicles); nonlinear interactions: parametric vibrations with single/multi-frequency excitations, multiple external and autoparametric resonances in multi-dof systems; nonlinear system identification: parametric/nonparametric identification, data-driven identification; experimental dynamics: benchmark experiments, experimental methods, instrumentation techniques, measurements in harsh environments, experimental validation of nonlinear models; wave propagation, solitons, kinks, breathers; solution methods for pdes: Lie groups, Hirota's method, perturbation methods, etc; nonlinear waves in media (granular materials, porous materials, materials with memory); composite structures: multi-layer, functionally graded, thermal loading; fluid/structure interaction; nonsmooth and retarded dynamics: systems with impacts, free play, stick-slip, friction hysteresis; nonlinear systems with time and/or space delays; stability of delay differential equations, differential-algebraic equations; space/time reduced-order modeling: enhanced discretization methods, center manifold reduction, nonlinear normal modes, normal forms; fractional-order systems; computational techniques: efficient algorithms, use of symbolic

manipulators, integration of symbolic manipulation and numerical methods, use of parallel processors; and multibody dynamics: rigid and flexible multibody system dynamics, impact and contact mechanics, tire modeling, railroad vehicle dynamics, computational multibody dynamics. *Fundamentals and Practice, Second Edition* Springer Nature

The first comprehensive and up-to-date reference on mechatronics, Robert Bishop's *The Mechatronics Handbook* was quickly embraced as the gold standard for the field. With updated coverage on all aspects of mechatronics, *The Mechatronics Handbook, Second Edition* is now available as a two-volume set. Each installment offers focused coverage of a particular area of mechatronics, supplying a convenient and flexible source of specific information. This seminal work is still the most exhaustive, state-of-the-art treatment of the field available. *Mechatronics Systems, Sensors, and Actuators: Fundamentals and Modeling* presents an overview of mechatronics, providing a foundation for those new to the field and authoritative support for seasoned professionals. The book introduces basic definitions and the key elements and includes detailed descriptions of the mathematical models of the mechanical, electrical, and fluid subsystems that comprise mechatronic systems. New chapters include *Mechatronics Engineering Curriculum Design and Numerical Simulation*. Discussion of the fundamental physical relationships and mathematical models associated with commonly used sensor and actuator technologies complete the coverage. Features *Introduces the key elements of mechatronics and discusses new directions* *Presents the underlying mechanical and electronic mathematical models comprising many mechatronic systems* *Provides a detailed discussion of the process of physical system modeling* *Covers time, frequency, and sensor and actuator characteristics*

Micro Energy Harvesting CRC Press

The essential introduction to the principles and applications of feedback systems—now fully revised and expanded This textbook covers the mathematics needed to model, analyze, and design feedback systems. Now more user-friendly than ever, this revised and expanded edition of *Feedback Systems* is a one-volume resource for students and researchers in mathematics and engineering. It has applications across a range of disciplines that utilize feedback in physical, biological, information, and economic systems. Karl Åström and Richard Murray use techniques from physics, computer science, and operations research to introduce control-oriented modeling. They begin with state space tools for analysis and design, including stability of solutions, Lyapunov functions, reachability, state feedback observability, and estimators. The matrix exponential plays a central role in the analysis of linear control systems, allowing a concise development of many of the key concepts for this class of models. Åström and Murray then develop and explain tools in the frequency domain, including transfer functions, Nyquist analysis, PID control, frequency domain design, and robustness. Features a new chapter on design principles and tools, illustrating the types of problems that can be solved using feedback Includes a new chapter on fundamental limits and new material on the Routh-Hurwitz criterion and root locus plots Provides exercises at the end of every chapter Comes with an electronic solutions manual An ideal textbook for undergraduate and graduate students Indispensable for researchers seeking a self-contained resource on control theory CRC Press

Digital Twin Development and Deployment in the Cloud: Developing Cloud-Friendly Dynamic Models Using Simulink®/Simscape™ and Amazon AWS promotes a physics-based approach to the field of digital twins. Through the use of multiphysics models running in the cloud, significant improvement to the diagnostics and prognostic of systems can be attained. The book draws a clear definition of digital twins, helping business leaders clearly identify the value it brings. In addition, it outlines the key elements needed for deployment, including the hardware and software tools needed. Special attention is paid to the process of developing and deploying the multi-physics models of the digital twins. Provides a high-level overview of digital twins and their underutilization in the field of asset management and maintenance Proposes a streamline process to create digital twins for a wide variety of applications using MATLAB® Simscape™ Deploys developed digital twins on Amazon Web Services Includes MATLAB and Simulink codes available for free download on MATLAB central Covers popular prototyping hardwares, such as Arduino and Raspberry Pi

Control System Dynamics Springer

Maintaining the outstanding features and practical approach that led the bestselling first edition to become a standard textbook in engineering classrooms worldwide, Clarence de Silva's *Vibration: Fundamentals and Practice, Second Edition* remains a solid instructional tool for modeling, analyzing, simulating, measuring, monitoring, testing, controlling, and designing for vibration in engineering systems. It condenses the author's distinguished and extensive experience into an easy-to-use, highly practical text that prepares students for real problems in a variety of engineering fields. What's New in the Second Edition? A new chapter on human response to vibration, with practical considerations Expanded and updated material on vibration monitoring and diagnosis Enhanced section on vibration control, updated with the latest techniques and methodologies New worked examples and end-of-chapter problems. Incorporates software tools, including LabVIEW™, SIMULINK®, MATLAB®, the LabVIEW Sound and Vibration Toolbox, and the MATLAB Control Systems Toolbox Enhanced worked examples and new solutions using MATLAB and SIMULINK The new chapter on human response to vibration examines representation of vibration detection and perception by humans as well as specifications and regulatory guidelines for human vibration environments. Remaining an indispensable text for advanced undergraduate and graduate students, *Vibration: Fundamentals and Practice, Second Edition* builds a unique and in-depth understanding of vibration on a sound framework of practical tools and applications.

Dynamics of Deepwater Riser John Wiley & Sons

This Second Edition continues the fine tradition of its predecessor by exploring the various automatic control systems in aircraft and on board missiles. Considerably expanded and updated, it now includes new or additional material on: the effectiveness of beta-beta feedback as a method of obtaining coordination during turns using the F-15 as the aircraft model; the root locus analysis of a generic acceleration autopilot used in many air-to-air and surface-to-air guided missiles; the guidance systems of the AIM-9L Sidewinder as well as bank-to-turn missiles; various types of guidance, including proportional navigation and line-of-sight and lead-angle command guidance; the coupling of the output of a director fire control system into the autopilot; the analysis of multivariable control systems; and methods for modeling the human pilot, plus the integration of the human pilot into an aircraft flight control system. Also features many new additions to the appendices.

Control Strategies for Dynamic Systems CRC Press

A textbook for engineers on the basic techniques in the analysis and design of automatic control systems.

Future Space-Transport-System Components under High Thermal and Mechanical Loads Springer Science & Business Media

Written by a professor with extensive teaching experience, *System Dynamics and Control with Bond Graph Modeling* treats system dynamics from a bond graph perspective. Using an approach that combines bond graph concepts and traditional approaches, the author presents an integrated approach to system dynamics and automatic controls. The textbook guides students from the process of modeling using bond graphs, through dynamic systems analysis in the time and

frequency domains, to classical and state-space controller design methods. Each chapter contains worked examples, review exercises, problems that assess students' grasp of concepts, and open-ended "challenges" that bring in real-world engineering practices. It also includes innovative vodcasts and animated examples, to motivate student learners and introduce new learning technologies.

System Dynamics and Control with Bond Graph Modeling CRC Press

Fuzzy modeling has become one of the most productive and successful results of fuzzy logic. Among others, it has been applied to knowledge discovery, automatic classification, long-term prediction, or medical and engineering analysis. The research developed in the topic during the last two decades has been mainly focused on exploiting the fuzzy model flexibility to obtain the highest accuracy. This approach usually sets aside the interpretability of the obtained models. However, we should remember the initial philosophy of fuzzy sets theory directed to serve the bridge between the human understanding and the machine processing. In this challenge, the ability of fuzzy models to express the behavior of the real system in a comprehensible manner acquires a great importance. This book collects the works of a group of experts in the field that advocate the interpretability improvements as a mechanism to obtain well balanced fuzzy models.

Structural Dynamics of Earthquake Engineering John Wiley & Sons

This book represents an attempt to organize and unify the diverse methods of analysis of feedback control systems and presents the fundamentals explicitly and clearly. The scope of the text is such that it can be used for a two-semester course in control systems at the level of undergraduate students in any of the various branches of engineering (electrical, aeronautical, mechanical, and chemical). Emphasis is on the development of basic theory. The text is easy to follow and contains many examples to reinforce the understanding of the theory. Several software programs have been developed in MATLAB platform for better understanding of design of control systems. Many varied problems are included at the end of each chapter. The basic principles and fundamental concepts of feedback control systems, using the conventional frequency domain and time-domain approaches, are presented in a clearly accessible form in the first portion (chapters 1 through 10). The later portion (chapters 11 through 14) provides a thorough understanding of concepts such as state space, controllability, and observability. Students are also acquainted with the techniques available for analysing discrete-data and nonlinear systems. The hallmark feature of this text is that it helps the reader gain a sound understanding of both modern and classical topics in control engineering.

Modeling and Analysis of Dynamic Systems John Wiley & Sons Incorporated

Building on the success of 'Modelling, Analysis, and Control of Dynamic Systems', 2nd edition, William Palm's new book offers a concise introduction to vibrations theory and applications. Design problems give readers the opportunity to apply what they've learned. Case studies illustrate practical engineering applications.

Engineering Vibrations Cambridge University Press

With its inclusion of the fundamentals, systems and applications, this reference provides readers with the basics of micro energy conversion along with expert knowledge on system electronics and real-life microdevices. The authors address different aspects of energy harvesting at the micro scale with a focus on miniaturized and microfabricated devices. Along the way they provide an overview of the field by compiling knowledge on the design, materials development, device realization and aspects of system integration, covering emerging technologies, as well as applications in power management, energy storage, medicine and low-power system electronics. In addition, they survey the energy harvesting principles based on chemical, thermal, mechanical, as well as hybrid and nanotechnology approaches. In unparalleled detail this volume presents the complete picture -- and a peek into the future -- of micro-powered microsystems.

Mechanical Vibration Elsevier

Novel mathematical and modeling approaches to problems in graded materials, biological materials, fluid mechanics and more Covers nanomechanics, multi-scale modeling, interface mechanics and microstructure This series volume contains 128 not previously published research presentations on using nonlinear mechanics to understand and model a wide variety of materials, including polymers, metals and composites, as well as subcellular and cellular tissues. Focus is on numerical and physics approaches to representing multiscale relationships within complex solids and fluids systems, with applications in materials science, energy storage, medical diagnostics and treatment, and biotechnology. TABLE OF CONTENTS Preface Committees SESSION 1: INVITED LECTURES Micro-Macro Analysis of Creep and Damage Behavior of Multi-Pass Welds Some New Developments in Non-Linear Solid Mechanics Design of Material Systems: Mathematics and Physics of the Archetype-Genome Exemplar Criticism of Generally Accepted Fundamentals and Methodologies of Traffic and Transportation Theory SESSION 2: NONLINEAR CONTINUUM MECHANICS Geometrically Nonlinear Analysis of Simple Plane Frames of Functionally Graded Materials Thermal Post-Buckling of FG Circular Plates Under Transversely Point-Space Constraint Tunability of Longitudinal Wave Band Gap in One Dimensional Magneto-Elastic Phononic Crystal Teaching Nonlinear Mechanics at the Undergraduate and Graduate Level—Two Examples Geometrically Nonlinear FE Instability Simulations of Hinged Composite Laminated Cylindrical Shells Constitutive Relation of Martensitic Transformation in CuAlNi Based on Atomistic Simulations Soft Behaviors of Beam Shaped Liquid Crystal Elastomers Under Light Actuations XFEM Based Discontinuity Simulation for Saturated Soil Numerical Algorithm of Solving the Problem of Large Elastic-Plastic Deformation by FEM Finite Deformation for Everted Compressible Hyperelastic Cylindrical Tubes Modelling and Non-Linear Free Vibrations of Cable-Stayed Beam Wavelet Solution of a Class of Nonlinear Boundary Value Problems Axial Compression of a Rectangular Rubber Ring Composed of an Incompressible Mooney-Rivlin Material Influence of Concentration-Dependent Elastic Modulus and Charge or Discharge Rate on Tensile Stress in Anode An Integral Equation Approach to the Fully Nonlinear Fluid Flow Problem in an Infinite Channel Over Arbitrary Bottom Topography Analysis of Nonlinear Dynamical Characteristics for Thermoelastic Half-Plane with Voids Tensor Model for Dynamic Damage of Ductile Metals Over a Wide Range of Strain Rates SESSION 3: MULTI-SCALE MECHANICS AND MULTI-PHYSICS MODELING The Nonlinear Magnetoelastic Effect of Layered Magnetoelastic Composite Cylinder with an Imperfect Interface A Solution for Nonlinear Poisson-Neumann Problem of Nb3Sn Superconducting Transport Current Temperature Effect on the Tensile Mechanical Properties of Graphene Nanoribbons Square Inclusion with a Nonlinear Eigenstrain in an Anisotropic Piezoelectric Full Plane Nonlinear Analysis of the Threaded Connection with Three-Dimensional Finite Element Model Effects of Particle Volume Fraction on the Macro-Thermo-Mechanical Behaviors in Plate-Type Dispersion Nuclear Fuel Elements Mechanics of Semiflexible Polymer Chains Under Confinements Study on the Solution of Reynolds Equation for Micro Gas Bearings Using the Alternating-Direction Implication Algorithm Atomistic Study of Li Concentration Dependence of the Mechanical Properties of Graphite Anode in Li-ion Battery 3D Extrusion Simulation of the Single Screw Head and Optimization Design Buckling Behavior of Defective Carbon Nanotubes Elastic Properties of Single-Stranded DNA Biofilm with Strong Interactions Analysis on Thickness Dependence of Jc Caused by Dislocations and Grain Boundaries in YBCO Superconducting Films Operating Strain Response in CICC Coils Through Nonlinear Finite Element Modeling Dynamics Analysis of a Multi-Degree-of-Freedom Electro-Hydraulic Mix-Drive Motion Simulator by KANE Equation Multiscale 3D Fracture Simulation Integrating Tomographic Characterization Research into Compressive Mechanical

Properties of Special Piezomagnetic Material Sheets A Numerical Study on Detonation Wave Propagation Using High-Precision and High-Resolution Schemes SESSION 4: STRUCTURAL DYNAMIC AND STRUCTURE-FLUID INTERACTIONS A Study on Pure IL VIV of a Marine Riser in Shear Current Parametric Studies on Nonlinear Flutter of High-Aspect-Ratio Flexible Wings Model Reduction of a Flexible Beam Rotating at High Speed Considering Dynamic Stiffening Vibration Modal Analysis of Cantilever Beams with Complicated Elasticity Boundary Constraint Numerical Simulation of Ahmed Model in Consideration of the FSI Effect Aerodynamic Damping of a Hammerhead Launch Vehicle in Transonic Flow Symmetry Reductions and Explicit Solutions of (3 + 1)-Dimensional Kadomtsev-Petviashvili (KP) Equation Nonlinear Behaviors of an Isotropic Incompressible Hyperelastic Spherical Membrane Under Different Dynamic Loads Creep Buckling of Viscoelastic Plate Considering Higher Order Modes SESSION 5: COMPLEX FLUID FLOW AND NONLINEAR STABILITY Homotopy Analysis of Korteweg-de Vries Equation with Time Delay Homotopy Analysis Method for Bubble Pulsation Equation with Nonlinear Term of Fractional Power Chebyshev Finite Spectral Method for Boussinesq-Type Equations on Staggered Grids Twin Jets in Crossflow Application of Fixed Point Method to Obtain a Semi-Analytical Solution of Stagnation Flow On the Nonlinear Stability of Laminar Flow Between Parallel Planes Boundary Treatments in Lattice Boltzmann Method A Lattice Boltzmann Based Immersed Boundary Method for Fluid-Structure Interaction Numerical Solutions of Convection-Diffusion Equations by Hybrid Discontinuous Galerkin Methods Steady-State Solutions of the Wave-Bottom Resonant Interaction Lattice Boltzmann Simulation of the Shock Damping and the Shock Increased by Means of Lorentz Force Analysis of the Effects of Nonlinear Characteristics of Lag Dampers on Helicopter Ground Resonance Flow Structures and Sound Radiation in Supersonic Mixing Layers with Nonlinear PSE Method Turbulent Structures in Subsonic Jet Flow Forced by Random Disturbances Exponential p-Stability for a Delayed Recurrent Neural Networks with Impulses Spatial Variation of Scaling Exponents for Structure Functions in a Decaying Turbulence SESSION 6: NONLINEAR DYNAMIC OF STRUCTURE Analysis of Chaos Behavior of Single Mode Vibration of Cable-Stayed Chaotification of Fractional Maps Nonlinear Finite Element Analysis of the Dynamic Axial Crushing of Empty Hexagonal Tube Active Control of a Nonlinear Aeroelastic System Using the Receptance Method Dynamics Analysis of the FHN Neuronal Model Analyzing the Effect of the Axial Force to the Natural Frequencies of Arch Stable Periodic Response of One-Way Clutches in a Two-Pulley Belt-Drive Model Supercritical Nonlinear Dynamics of an Axially Moving Viscoelastic Beam with Speed Fluctuation Nonlinear Dynamic Response to a Moving Force of Timoshenko Beams Resting on Pasternak Foundations An Improved Method for the Construction of Nonlinear Operator in Homotopy Analysis Method A Nonlinear Integration Scheme for Evolutionary Differential Equations A Comparative Study of Civil Aircraft Crashworthiness with Different Ground Conditions Improved Dynamic Analysis of Development of Pulmonary Edema The Timescale Function Method for Solving Free Vibration of Nonlinear Oscillator Nonlinear Aeroelastic Analysis of Flexible Wings with High-Aspect-Ratio Considering Large Deflection Differential Quadrature Method for Vibration Analysis of Finite Beams on Nonlinear Viscoelastic Foundations Numerical Simulation on the Strength and Sealing Performance for High-Pressure Isolating Flange Nonlinear Dynamical Stability of the Lattices with Initial Material and Geometric Imperfection Nonlinear Vibration of Symmetric Angle-Ply

Laminated Piezoelectric Plates with Linearly Varying Thickness An Exact Free Vibration Frequency Formula for Oscillator with Single-Term Positive-Power Restoring Force An Exact Solution of Synchronization State for a Class of Networked Mass-Spring-Damper Oscillator Systems SESSION 7: INTERFACE MECHANICS AND ENGINEERING APPLICATION Numerical Simulation of Free Surface Collapse in Propellant Tank Restudy on the Adaptive Mesh Technique for Seepage Problems High-Order Series Solutions of Wave and Current Interactions Deformation and Stress Distribution of Arterial Walls of the Aged A p53-Mdm2 Dynamical Model Induced by Laminar Shear Stress in Endothelial Cells Optimized Image Processing Based on CUDA in a Combined Measurement Technique of PIV and Shadowgraph 3D Visualization of the Flow Fields Using Digital In-Line Holography Analysis and Experimental Study on Air Foam Flooding Seepage Flow Mechanics Experimental Measurements for Mechanical and Electrical Conductive Properties of CNT Bundles Analysis on Dynamic Response of Bedding Rock Slope with Bolts under Earthquakes Numerical Prediction of Aerodynamic Noise Radiated from High Speed Train Pantograph Effects of Length on Aerodynamics of High Speed Train Models Free Convection Nanofluid Flow in the Stagnation-Point Region of a Three Dimensional Body Vertical Distribution and Dynamic Release Characteristics of Pollutants from Resuspended Sediment Numerical Simulation of the Contaminant Release Through the Sediment-Overlying Water Interface Analysis on the Aerodynamic and Aero-Noise of MIRA Model Radial Squeeze Force of MR Fluid Between Two Cylinders Nonlinear Buckling Analysis and Ultimate Extended Capacity Research of Downhole Pipe Strings in Ultra-Deep Horizontal Wells A Novel Method of Generating Nonlinear Internal Wave in a Stratified Fluid Tank and Its Theoretical Model SESSION 8: MINI-SYMPOSIUM ON TRAFFIC FLUID Study on Correlation Analysis of Synchronized Flow in the Kerner-Klenov-Wolf Cellular Automation Model Numerical Simulation of Traffic Flow in the Rain or Snow Weather Condition First Order Phase Transitions in the Brake Light Cellular Automation Model Within the Fundamental Diagram Approach The Leader-Follower Winding Behavior of Pedestrians in a Queue Effect of Overpasses in Two-Dimensional Traffic Flow Model with Random Update Rule Analysis of the Density Wave in a New Continuum Model The Phenomenon of High-Speed-Car-Following on Chinese Highways A Lattice Hydrodynamic Model Considering the Difference of Density and its Analysis Experimental Feature of Car-Following Behaviors in a Platoon of 25 Vehicles Car-Following Model for Manual Transmission Vehicles The Mechanism of Synchronized Flow in Traffic Flow Modeling An Asymmetric Stochastic Car-Following Model Based on Extended Tau Theory A Gaussian Distribution Based Dual-Cognition Driver Behavior Model at Cross Traffic A New Traffic Kinetic Model Considering Potential Influence The Effect of Marks on the Pedestrian Evacuation Equilibrium Velocity Distribution Function for Traffic Flow Effects of Antilock Braking System on Driving Behavior Under Emergent Stability Analysis of Pedestrian Flow in Two-Dimensional Optimal Velocity Model with Asymmetric Interaction Simulation-Based Stability Analysis of Car-Following Models Under Heterogeneous Traffic Crossing Speed of Pedestrian at an Unsignalized Intersection Modeling Mixed Traffic Flow at a Crosswalk with Push Button Effects of Game Strategy Update on Pedestrian Evacuation in a Hall Study on Long-Term Correlation of CO and CO₂ from Vehicle Emissions on Roadsides with the Detrended Fluctuation Analysis Method Bottleneck Effect on a Bidirectional Two-Lane Mixed Traffic Flow

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