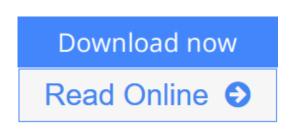


# Vehicle Handling Dynamics, Second Edition: Theory and Application

By Masato Abe



# **Vehicle Handling Dynamics, Second Edition: Theory and Application** By Masato Abe

Vehicle dynamics are vital for optimizing a vehicle's drivability, efficiency, and safety. Understanding the forces and motions on a vehicle (both theoretical aspects, like basic equations of motion, and practical ones, like tire mechanics and human vehicle control) is integral in the design and development of all vehicles. Masato Abe's *Vehicle Handling Dynamics*, Second Edition, provides comprehensive coverage of vehicle dynamics, enabling readers to visualize and invent better vehicles.

Vehicle Handling Dynamics begins with an overview of the fundamental theories of vehicle handling dynamics, based on simple equations of motion. The book then extends to driver-vehicle behavior, handling quality and active vehicle motion control. In addition, this new edition includes two new chapters. Chapter 9 covers vehicle motion control for electric vehicles, crucial in this new era of automobiles. Chapter 12 studies the classic issue of model-based handling quality evaluations (challenging the traditional dependencies on test drivers for determining a vehicle's drivability).

Written by one of the most distinguished authorities in the area, *Vehicle Handling Dynamics*, Second Edition, lends equal and careful consideration to both theory and application, providing valuable insights for students of and engineers working in vehicle dynamics and control.

- Discusses the fundamentals of vehicle dynamics from basic theory to hands-on applications, using Newton's equations of motion to show the link between mechanics and vehicle behavior
- Provides practical examples and real-life details to ensure thorough understanding of vehicle handling dynamics and control
- Includes case studies and worked examples using MATLAB® and Simulink®
- Covers all variables of vehicle dynamics, including tire and vehicle motion, control aspects, human control, and external disturbances

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#### About the Author

Masato Abe is Professor Emeritus at Kanagawa Institute of Technology. He has authored over 100 papers and served as co-editor of the journal Vehicle Systems and Dynamics. Abe is a leading researcher in vehicle dynamics and control, driver-vehicle-system analysis and application, electric vehicle with four-wheel independent driving and steering systems, and networked multiple driving simulators for accident analysis and vehicle traffic safety.

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