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Vehicle Dynamics

Modeling and Simulation

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Preface

The main focus of this book is on the fundamentals of "Vehicle Dynamics" and the mathematical modeling and simulation of motor vehicles. The range of applications encompasses basic single track models as well as complex, spatial multibody systems. The reader will be enabled to develop own simulation models, supported to apply successfully commercial programs, to choose appropriate models and to understand and assess simulation results. The book describes in particular the modeling process from the real vehicle to the mathematical model as well as the validation of simulation results by means of selected applications.

The book is aimed at students and postgraduates in the field of engineering sciences who attend lectures or work on their thesis. To the same extent it addresses development engineers and researches working on vehicle dynamics or apply associated simulation programs.

The modeling of Vehicle Dynamics is primarily based on mathematical methods used throughout the book. The reader should therefore have a basic understanding of mathematics, e.g., from the first three semesters' study course in engineering or natural sciences.

This edition of the book is the English version of the second German edition.

The authors thank all persons who contributed to this edition of the book. Amongst all persons who contributed by giving hints and sometimes simply asking the right questions we want to highlight in particular the indispensable contributions of Stephanie Meyer, Lawrence Louis and Michael Unterreiner who contributed with translation and proof reading of some chapters. We also thank Frederic Kracht for diligent proofreading and the solution of unsolvable problems incident to the secrets of contemporary word processor software.

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