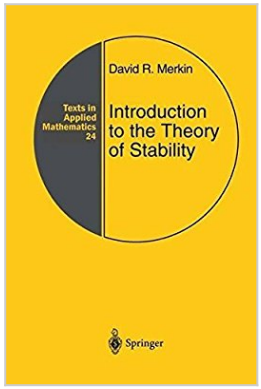


# Introduction to the Theory of Stability (Texts in Applied Mathematics)

*By David R. Merkin*



**Introduction to the Theory of Stability (Texts in Applied Mathematics)** By David R. Merkin

Many books on stability theory of motion have been published in various lan guages, including English. Most of these are comprehensive monographs, with each one devoted to a separate complicated issue of the theory. Generally, the examples included in such books are very interesting from the point of view of mathematics, without necessarily having much practical value. Usually, they are written using complicated mathematical language, so that except in rare cases, their content becomes incomprehensible to engineers, researchers, students, and sometimes even to professors at technical universities. The present book deals only with those issues of stability of motion that most often are encountered in the solution of scientific and technical problems. This allows the author to explain the theory in a simple but rigorous manner without going into minute details that would be of interest only to specialists. Also, using appropriate examples, he demonstrates the process of investigating the stability of motion from the formulation of a problem and obtaining the differential equations of perturbed motion to complete analysis and recommendations. About one fourth of the examples are from various areas of science and technology. Moreover, some of the examples and the problems have an independent value in that they could be applicable to the design of various mechanisms and devices. The present translation is based on the third Russian edition of 1987.

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## Editorial Review

Language Notes
Text: English (translation)
Original Language: Russian

From the Back Cover
This book is an introduction to the theory of stability of motion. The principal focus of the book is to present the most effective methods, such as the direct method of Liapunov, stability in the first-order approximation, and frequency methods, which can be used in studying stability issues. Other chapters are devoted to the treatment of nonautonomous systems, systems with periodic coefficients (including Mathieu-Hill equations), automatic control systems, and the effects of force type on stability of motion. These chapters also include relevant theorems which were proved for the first time by the author. The book contains many practical examples with detailed solutions from various areas of science and engineering involving both mechanical and electromechanical systems. Basically, the present book is written for graduate students in engineering; however, the required level of mathematics does not exceed that of a typical engineering undergraduate knowledge in calculus. The book should also benefit educators, engineers, and scientists who use the theory of stability of motion in their work.

## Users Review

**From reader reviews:**

**Patricia Oyler:**

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