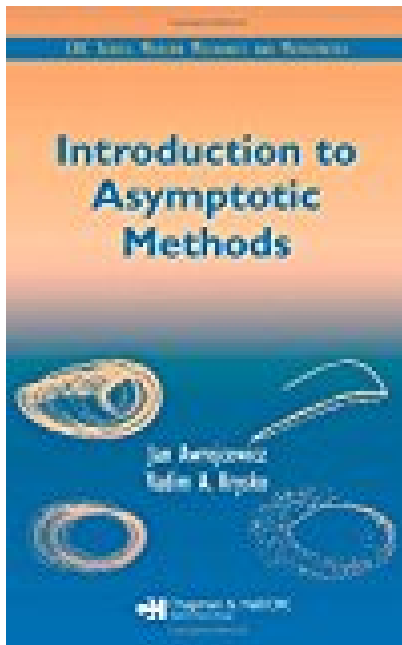


# Introduction to Asymptotic Methods Modern Mechanics and Mathematics

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## BOOK DETAILS

- Author : David Y. Gao
- Pages : 272 Pages
- Publisher : Chapman and Hall/CRC
- Language : English
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## BOOK SYNOPSIS

Among the theoretical methods for solving many problems of applied mathematics, physics, and technology, asymptotic methods often provide results that lead to obtaining more effective algorithms of numerical evaluation. Presenting the mathematical methods of perturbation theory, *Introduction to Asymptotic Methods* reviews the most important methods of singular perturbations within the scope of application of differential equations. The authors take a challenging and original approach based on the integrated mathematical-analytical treatment of various objects taken from interdisciplinary fields of mechanics, physics, and applied mathematics. This new hybrid approach will lead to results that cannot be obtained by standard theories in the field. Emphasizing fundamental elements of the mathematical modeling process, the book provides comprehensive coverage of asymptotic approaches, regular and singular perturbations, one-dimensional non-stationary non-linear waves, Padé approximations, oscillators with negative Duffing type stiffness, and differential equations with discontinuous nonlinearities. The book also offers a method of construction for canonical variables transformation in parametric form along with a number of examples and applications. The book is applications oriented and features results and literature citations that have not been seen in the Western Scientific Community. The authors emphasize the dynamics of the development of perturbation methods and present the development of ideas associated with this wide field of research.

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