



MONOGRAPHS

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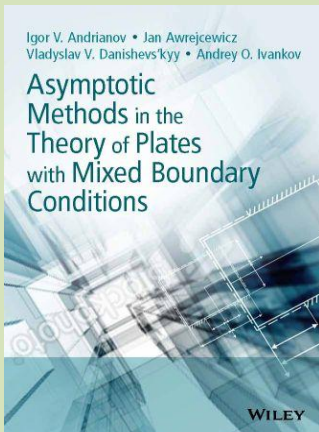
Asymptotic Methods in the Theory of Plates with Mixed Boundary Conditions

(with I.V. Andrianov, V.V. Danishevs'kyy, A.O. Ivankov)

Wiley, 2014

monograph, 286 pages, ISBN 978-1-118-72519-1

SUMMARY



Asymptotic Methods in the Theory of Plates with Mixed Boundary Conditions comprehensively covers the theoretical background of asymptotic approaches and their use in solving mechanical engineering-oriented problems of structural members, primarily plates (statics and dynamics) with mixed boundary conditions.

The first part of this book introduces the theory and application of asymptotic methods and includes a series of approaches that have been omitted or not rigorously treated in the existing literature. These lesser known approaches include the method of summation and construction of the asymptotically equivalent functions, methods of small and large delta, and the homotopy perturbations method.

The second part of the book contains original results devoted to the solution of the mixed problems of the theory of plates, including statics, dynamics and stability of the studied objects. In addition, the applicability of the approaches presented to other related linear or nonlinear problems is addressed.

Key features:

- Includes analytical solving of mixed boundary value problems
- Introduces modern asymptotic and summation procedures
- Presents asymptotic approaches for nonlinear dynamics of rods, beams and plates
- Covers statics, dynamics and stability of plates with mixed boundary conditions
- Explains links between the Adomian and homotopy perturbation approaches

Asymptotic Methods in the Theory of Plates with Mixed Boundary Conditions is a comprehensive reference for researchers and practitioners working in the field of Mechanics of Solids and Mechanical Engineering, and is also a valuable resource for graduate and postgraduate students from Civil and Mechanical Engineering.

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