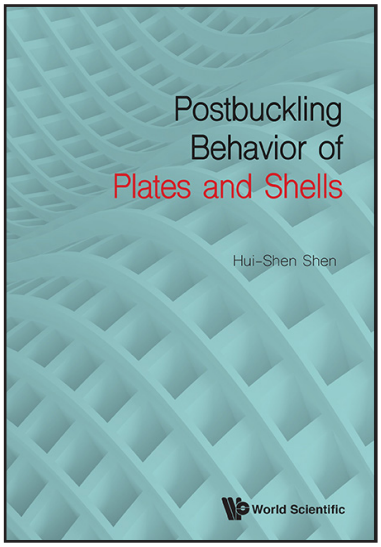
POSTBUCKLING BEHAVIOR OF PLATES AND SHELLS

By **Hui-Shen Shen** (*Shanghai Jiao Tong University, China*)



Key Features:

- This book provides a novel boundary layer theory for the shell buckling
- This book provides a novel two-step perturbation technique to solve postbuckling problems of plates and shells
- This book provides comprehensive numerical results which may serve as benchmarks for checking the validity and accuracy of other numerical solutions

Description:

As an experts in structure and stress analysis, the author has written extensively on functionally graded materials (FGMs), nonlinear vibration and dynamic response of functionally graded material plates in thermal environments, buckling and postbuckling analysis of single-walled carbon nanotubes in thermal environments. This book provides a comprehensive overview of the author's works which include significant contributions to the postbuckling behavior of plates and shells under different loading and environmental conditions.

This book comprises eight chapters. Each chapter contains adequate introductory material so that an engineering graduate who is familiar with basic understanding of plates and shells will be able to follow it.

- Chapter 1 introduces higher order shear deformation plate theory and the derivation of the nonlinear equations of shear deformable plates in the von Kármán sense.
- Chapter 2, covers the postbuckling behavior of thin plates due to in-plane compressive loads or temperature variation.
- Chapter 3 presents analytical solutions of moderately thick isotropic plates without or resting on elastic foundations.
- Chapter 4 furnishes a detailed treatment of the postbuckling problems of shear deformable laminated plates subjected to thermal, electrical, and mechanical loads.
- Chapter 5 put forward a concepts of boundary layer theory for shell buckling and isotropic cylindrical shells.
- Chapter 6 extends this novel theory to the cases of anisotropic laminated cylindrical thin shells.
- Chapter 7 presents postbuckling analysis of shear deformable laminated cylindrical shells under the framework of boundary layer theory.
- Chapter 8 deals with postbuckling behavior of laminated cylindrical panels under various loading conditions.

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Contents:

- Nonlinear Theory of Shear Deformable Laminated Plates
- Postbuckling Behavior of Thin Plates
- Postbuckling Behavior of Shear Deformable Isotropic Plates
- Postbuckling Behavior of Shear Deformable Laminated Plates
- Boundary Layer Theory of Shell Buckling
- Postbuckling Behavior of Laminated Cylindrical Thin Shells
- Postbuckling Behavior of Shear Deformable Laminated Cylindrical Shells
- Postbuckling Behavior of Shear Deformable Laminated Cylindrical Panels

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