The Transition to Chaos : In Conservative Classical Systems: Quantum Manifestations /

Reichl, L. E.

Springer New York,
1992

Monografía

The subjects treated here are part of an active and rapidly growing field of research that touches on the foundations of physics and chemistry. Specifically, the book presents, in as simple and coherent a manner as possible, the basic mechanisms that determine the dynamical evolution of both classical and quantum systems in sufficient generality to include nonlinear phenomena. The book begins with a discussion of Noether's Theorem, integrability, KAM theory, and a definition of chaotic behavior; it continues with a detailed discussion of area-preserving maps, integrable quantum systems, spectral properties, path integrals, and periodically driven systems; and concludes by showing how to apply the ideas to stochastic systems. Appendices fill in much of the necessary mathematical background. Based on courses given at Universities in California, Texas, and China, the book will be useful both as a text and as a reference. The presentation is complete, and there are extensive references to the current research literature. Problems at the ends of the chapters will help students clarify their understanding of the concepts

Título: The Transition to Chaos In Conservative Classical Systems: Quantum Manifestations by L.E. Reichl

Editorial: New York, NY Springer New York 1992

Descripción física: 1 online resource (xvi, 551 pages)

Mención de serie: Institute for Nonlinear Science 1431-4673

Bibliografía: Includes bibliographical references at the end of each chapters and indexes

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Lengua: English

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ISBN: 9781475743524 electronic bk.) 1475743521 electronic bk.) 9781475743548 1475743548 1475743521

Materia: Physics Quantum theory Physique Théorie quantique physics. Physics. Quantum theory.

Enlace a formato físico adicional: Print version 9781475743548

Punto acceso adicional serie-Título: Institute for Nonlinear Science

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