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Titolo	Thermodynamics [[electronic resource] ] : a dynamical systems approach / / Wassim M. Haddad, VijaySekhar Chellaboina, Sergey G. Nersesov
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Altri autori (Persone)	ChellaboinaVijaySekhar <1970-> NersesovSergey G. <1976->
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Nota di contenuto	Frontmatter -- Contents -- Preface -- Chapter 1. Introduction -- Chapter 2. Dynamical System Theory -- Chapter 3. A Systems Foundation for Thermodynamics -- Chapter 4. Temperature Equipartition and the Kinetic Theory of Gases -- Chapter 5. Work, Heat, and the Carnot Cycle -- Chapter 6. Thermodynamic Systems with Linear Energy Exchange -- Chapter 7. Continuum Thermodynamics -- Chapter 8. Conclusion -- Bibliography -- Index
Sommario/riassunto	This book places thermodynamics on a system-theoretic foundation so as to harmonize it with classical mechanics. Using the highest standards of exposition and rigor, the authors develop a novel formulation of thermodynamics that can be viewed as a moderate-sized system theory as compared to statistical thermodynamics. This middle-ground theory involves deterministic large-scale dynamical system models that bridge the gap between classical and statistical thermodynamics. The authors' theory is motivated by the fact that a discipline as cardinal as thermodynamics--entrusted with some of the most perplexing secrets of our universe--demands far more than

physical mathematics as its underpinning. Even though many great physicists, such as Archimedes, Newton, and Lagrange, have humbled us with their mathematically seamless eureka's over the centuries, this book suggests that a great many physicists and engineers who have developed the theory of thermodynamics seem to have forgotten that mathematics, when used rigorously, is the irrefutable pathway to truth. This book uses system theoretic ideas to bring coherence, clarity, and precision to an extremely important and poorly understood classical area of science.

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