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The Quantum Thermodynamics of Interacting Systems

A Prospectus for Quantum Thermodynamics,
Volume 5 of The Theory of Interacting Systems

by
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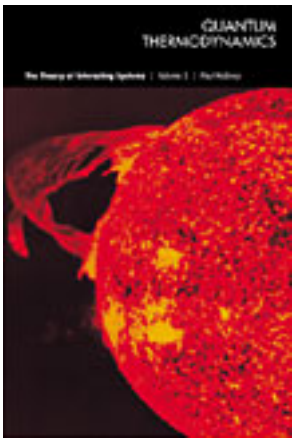

"Until the very stars unwind . . ."

Quantum thermodynamics is concerned with the macroscopic consequences of quantum mechanics. Thermodynamic quantities are represented as time-dependent expectation values of operators computed in the volume occupied by a body. These quantities and operators for computing their volume and temperature derivatives are united in a spacetime formalism for quantum thermodynamics which is consistent with quantum mechanics. Equilibrium quantum thermodynamics is included as a special asymptotic case of the general theory. The resulting formalism is illustrated by an examination of the thermodynamics of stars.

Entropy remains the most difficult concept of thermodynamics. It is approached through an examination of a connection between entropy and probability proposed by Boltzmann and later used by Planck in his theory of blackbody radiation. A detailed analysis of this idea is followed in the subsequent work of Planck, Einstein, Lorentz, Poincaré, Bose, von Neumann, Fowler, and many others.

Portions of the text of this Prospectus are excerpted from the Preface, Table of Contents, Chapter 1, and the Back Cover of *The Theory of Interacting Systems, Volume 5, Quantum Thermodynamics* published by Micro-Analytix. It is referred to as QTS in this document. Similarly, The Theory of Interacting Systems is referred to as TIS.

Additional information on this book will be provided in this document when the book is published.

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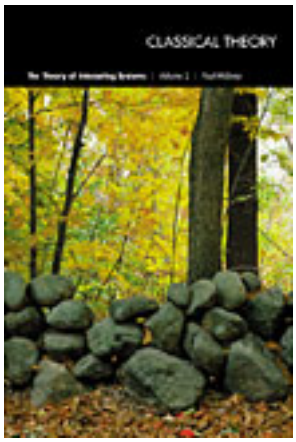

The Theory of Interacting Systems

Volume 1 | Niels Bohr: Reflections on Subject and Object

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Volume 5 | Quantum Thermodynamics

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