

1. Record Nr.	UNINA9910300531803321
Autore	Manzano Paule Gonzalo
Titolo	Thermodynamics and Synchronization in Open Quantum Systems // by Gonzalo Manzano Paule
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2018
ISBN	3-319-93964-5
Edizione	[1st ed. 2018.]
Descrizione fisica	1 online resource (424 pages)
Collana	Springer Theses, Recognizing Outstanding Ph.D. Research, , 2190-5053
Disciplina	530.12011
Soggetti	Thermodynamics Quantum theory Quantum Physics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Part 1: Introduction to Open Quantum Systems and Quantum Thermodynamics -- Basic Concepts -- Open Quantum System Dynamics -- Quantum Thermodynamics -- Part 2: Quantum Synchronization Induced by Dissipation in Many-Body Systems -- Transient Synchronization and Quantum Correlations -- Noiseless Subsystems and Synchronization -- Dissipative Complex Quantum Networks -- Part 3: Quantum Fluctuation Theorems and Entropy Production -- Fluctuation Theorems for Quantum Maps -- Entropy Production Fluctuations in Quantum Process -- Simple Applications of the Entropy Production FT's -- Part 4: Quantum Thermal Machines -- Thermodynamic Power of the Squeezed Thermal Reservoir.- Performance of Autonomous Quantum Thermal Machines -- Part 5: Conclusions -- Summary and Outlook.
Sommario/riassunto	This book explores some of the connections between dissipative and quantum effects from a theoretical point of view. It focuses on three main topics: the relation between synchronization and quantum correlations, the thermodynamical properties of fluctuations, and the performance of quantum thermal machines. Dissipation effects have a profound impact on the behavior and properties of quantum systems, and the unavoidable interaction with the surrounding environment,

with which systems continuously exchange information, energy, angular momentum and matter, is ultimately responsible for decoherence phenomena and the emergence of classical behavior. However, there is a wide intermediate regime in which the interplay between dissipative and quantum effects gives rise to a plethora of rich and striking phenomena that has just started to be understood. In addition, the recent breakthrough techniques in controlling and manipulating quantum systems in the laboratory have made this phenomenology accessible in experiments and potentially applicable.
