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Sommario/riassunto	In this book, the equilibrium and nonequilibrium properties of continuous phase transitions are studied in various systems, with a special emphasis on understanding how well-established universal traits at equilibrium may be extended into the dynamic realm, going beyond the paradigmatic Kibble–Zurek mechanism of defect formation. This book reports on the existence of a quantum phase transition in a system comprising just a single spin and a bosonic mode (the quantum Rabi model). Though critical phenomena are inherent to many-body physics, the author demonstrates that this small and ostensibly simple

system allows us to explore the rich phenomenology of phase transitions, both in- and out-of-equilibrium. Moreover, the universal traits of this quantum phase transition may be realized in a single trapped-ion experiment, thus avoiding the need to scale up the number of constituents. In this system, the phase transition takes place in a suitable limit of system parameters rather than in the conventional thermodynamic limit – a novel notion that the author and his collaborators have dubbed the finite-component system phase transition. As such, the results gathered in this book will open promising new avenues in our understanding and exploration of quantum critical phenomena.