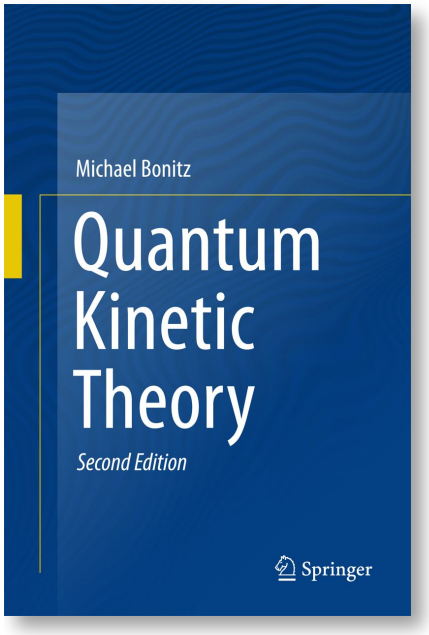

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M. Bonitz

Quantum Kinetic Theory

- Provides a general introduction to many-particle dynamics in quantum systems
- Gives a broad overview on density operator methods and non-equilibrium Green functions
- Covers modern time-dependent many-body methods that have emerged in various fields of physics and chemistry
- Supports learning and teaching with added problems and solutions
- Represents a tremendous resource for high energy density physics

This book presents quantum kinetic theory in a comprehensive way. The focus is on density operator methods and on non-equilibrium Green functions. The theory allows to rigorously treat nonequilibrium dynamics in quantum many-body systems. Of particular interest are ultrafast processes in plasmas, condensed matter and trapped atoms that are stimulated by rapidly developing experiments with short pulse lasers and free electron lasers. To describe these experiments theoretically, the most powerful approach is given by non-Markovian quantum kinetic equations that are discussed in detail, including computational aspects.