1. Record Nr. UNINA9910495241903321 Autore **Beck Christian** Titolo Local quantum measurement and relativity / / Christian Beck Pubbl/distr/stampa Cham, Switzerland:,: Springer,, [2021] ©2021 **ISBN** 3-030-67533-5 Edizione [1st ed. 2021.] Descrizione fisica 1 online resource (XI, 392 p. 47 illus.) Fundamental Theories of Physics;; Volume 201 Collana Disciplina 530.12 Soggetti Quantum theory Mathematical physics **Physics** Lingua di pubblicazione Inglese **Formato** Materiale a stampa Livello bibliografico Monografia Nota di contenuto Introduction and Outline -- Quantum Measurement -- Local Quantum Measurement I -- Local Quantum Measurement II -- An Active Notion of Localization -- Appendix. This book treats various aspects of the quantum theory of Sommario/riassunto measurement, partially in a relativistic framework. Measurement(-like) processes in quantum theory are identified and analysed; and the quantum operator formalism is derived in full generality without postulating operators as observables. Consistency conditions are derived, expressing the requirement of Lorentz-frame independence of outcomes of spacelike separated measurements and implying the impossibility of using quantum nonlocality to send signals faster than light. Local commutativity is scrutinized. The localization problem of relativistic quantum theory is studied, including comprehensive derivation of the theorems of Hegerfeld, Malament and Reeh-Schlieder.

Finally, the quantum formalism is derived from the dynamics of

particles with definite positions in Bohmian mechanics.