1.	Record Nr.	UNINA9910484175003321
	Titolo	Quantum transport : modelling analysis and asymptotics : lectures given at the C.I.M.E. Summer School held in Cetraro, Italy, September 11-16, 2006 / / by Gregoire Allaire ... [et al.] ; editors, Naoufel Ben Abdallah, Giovanni Frosali
	Pubbl/distr/stampa	Berlin, : Springer, c2008
	ISBN	9783540795742 354079574X
	Edizione	[1st ed. 2008.]
	Descrizione fisica	1 online resource (XIV, 260 p. 57 illus.)
	Collana	Lecture notes in mathematics, , 0075-8434 ; ; 1946
	Altri autori (Persone)	AllaireGregoire Ben-AbdallahNaoufel FrosaliGiovanni
	Disciplina	530.1433
	Soggetti	Quantum electrodynamics Evolution equations - Asymptotic theory Quantum theory - Mathematical models Transport theory - Mathematical models
	Lingua di pubblicazione	Inglese
	Formato	Materiale a stampa
	Livello bibliografico	Monografia
	Note generali	Bibliographic Level Mode of Issuance: Monograph
	Nota di bibliografia	Includes bibliographical references.
	Nota di contenuto	Periodic Homogenization and Effective Mass Theorems for the Schrödinger Equation -- Mathematical Properties of Quantum Evolution Equations -- Quantum Hydrodynamic and Diffusion Models Derived from the Entropy Principle -- Multiscale Computations for Flow and Transport in Heterogeneous Media.
	Sommario/riassunto	The CIME Summer School held in Cetraro, Italy, in 2006 addressed researchers interested in the mathematical study of quantum transport models. In this volume, a result of the above mentioned Summer School, four leading specialists present different aspects of quantum transport modelling. Allaire introduces the periodic homogenization theory, with a particular emphasis on applications to the Schrödinger equation. Arnold focuses on several quantum evolution equations that are used for quantum semiconductor device simulations. Degond presents quantum hydrodynamic and diffusion models starting from the entropy minimization principle. Hou provides the state-of-the-art

survey of the multiscale analysis, modelling and simulation of transport phenomena. The volume contains accurate expositions of the main aspects of quantum transport modelling and provides an excellent basis for researchers in this field.