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Sommario/riassunto

The aim of this book is to introduce the basic elements of the scattering matrix approach to transport phenomena in dynamical quantum systems of non-interacting electrons. This approach admits a physically clear and transparent description of transport processes in dynamical mesoscopic systems promising basic elements of solid-state devices for quantum information processing. One of the key effects, the quantum pump effect, is considered in detail. In addition, the theory for a recently implemented new dynamical source - injecting electrons with time delay much larger than the electron coheren