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                        / Bernard Helffer

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   Collana   Lecture notes in mathematics (Springer-Verlag) ; ; 1336

   Disciplina   515.724

   Soggetti   Schrodinger operator
                        Differential equations, Partial - Asymptotic theory
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   Nota di contenuto   Generalities on semi-classical analysis -- B.K.W. Construction for a
                        potential near the bottom in the case of non-degenerate minima --
                        The decay of the eigenfunctions -- Study of interaction between the
                        wells -- An introduction to recent results of Witten -- On Schrödinger
                        operators with periodic electric potentials -- On Schrödinger operators
                        with magnetic fields.

   Sommario/riassunto   This introduction to semi-classical analysis is an extension of a course
                        given by the author at the University of Nankai. It presents for some of
                        the standard cases presented in quantum mechanics books a rigorous
                        study of the tunneling effect, as an introduction to recent research
                        work. The book may be read by a graduate student familiar with the
                        classic book of Reed-Simon, and for some chapters basic notions in
                        differential geometry. The mathematician will find here a nice
                        application of PDE techniques and the physicist will discover the precise
                        link between approximate solutions (B.K.W. constructions) and exact
                        eigenfunctions (in every dimension). An application to Witten's
                        approach for the proof of the Morse inequalities is given, as are recent
                        results for the Schrödinger operator with periodic potentials.