Record Nr. Autore Titolo Pubbl/distr/stampa	UNINA9910450780803321 Nakamura Hiroki Nonadiabatic transition [[electronic resource]] : concepts, basic theories and applications / / by Hiroki Nakamura River Edge, NJ, : World Scientific, c2002
ISBN	981-277-840-3
Descrizione fisica	1 online resource (xi, 376 p.) : ill
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Lingua di pubblicazione	Inglese
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Nota di bibliografia	Includes bibliographical references (p. 361-370) and index.
Nota di contenuto	ch. 1. Introduction: what is "nonadiabatic transition"? ch. 2. Multi- disciplinarity. 2.1. Physics. 2.2. Chemistry. 2.3. Biology. 2.4. Economics ch. 3. Historical survey of theoretical studies. 3.1. Landau-Zener- Stueckelberg theory. 3.2. Rosen-Zener-Demkov theory. 3.3. Nikitin's exponential model. 3.4. Nonadiabatic transition due to Coriolis coupling and dynamical state representation ch. 4. Background mathematics. 4.1. Wentzel-Kramers-Brillouin semiclassical theory. 4.2. Stokes phenomenon ch. 5. Basic two-state theory for time- independent processes. 5.1. Exact solutions of the linear curve crossing problems. 5.2. Complete semiclassical solutions of general curve crossing problems. 5.3. Non-curve-crossing case. 5.4. Exponential potential model. 5.5. Mathematical implications ch. 6. Basic two- state theory for time-dependent processes. 6.1. Exact solution of quadratic potential problem. 6.2. Semiclassical solution in general case. 6.3. Other exactly solvable models ch. 7. Two-state problems. 7.1. Diagrammatic technique. 7.2. Inelastic scattering. 7.3. Elastic scattering with resonances and predissociation. 7.4. Perturbed bound states. 7.5. Time-dependent periodic crossing problems ch. 8. Effects of dissipation and fluctuation ch. 9. Multi-channel problems. 9.1. Exactly solvable models. 9.2. Semiclassical theory of time-independent multi-channel problems. 9.3. Time-dependent problems ch. 10. Multi-dimensional problems. 10.1. Classification of surface crossing.

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	10.2. Reduction to one-dimensional multi-channel problem. 10.3. Semiclassical propagation method ch. 11. Complete reflection and bound states in the continuum. 11.1. One NT-type crossing case. 11.2. Diabatically avoided crossing (DAC) case. 11.3. Two NT-type crossings case ch. 12. New mechanism of molecular switching. 12.1. Basic idea. 12.2. One-dimensional model. 12.3. Two-dimensional model. 12.4. Numerical examples ch. 13. Control of nonadiabatic processes by an external field. 13.1. Control of nonadiabatic transitions by periodically sweeping external field. 13.2. Basic theory. 13.3. Numerical examples. 13.4. Laser control of photodissociation with use of the complete reflection phenomenon ch. 14. Conclusions: future perspectives.
Sommario/riassunto	An exploration of the concepts, basic theories and applications of nonadiabatic transition. Nonadiabatic transition is a multidisciplinary concept and phenomenon, constituting a fundamental mechanism of state and phase changes in various dynamical processes of physics, chemistry and biology.