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Titolo	Resonances [[electronic resource] ] : The Unifying Route Towards the Formulation of Dynamical Processes Foundations and Applications in Nuclear, Atomic and Molecular Physics // edited by Erkki Brändas, Nils Elander
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Collana	Lecture Notes in Physics, , 0075-8450 ; ; 325
Disciplina	530.1
Soggetti	Mathematical physics Nuclear physics Heavy ions Nuclear fusion Atoms Physics Theoretical, Mathematical and Computational Physics Nuclear Physics, Heavy Ions, Hadrons Nuclear Fusion Atomic, Molecular, Optical and Plasma Physics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	to Rigged Hilbert Spaces (RHS) -- Comparison between different notions of resonances -- Resonances and semiclassical analysis -- Resonances with a background potential -- On the general inversion problem -- Weyl's theory studies and the one-dimensional almost periodic Schrödinger equation -- A generalization of Rouché's theorem with application to resonances -- Generalization of Müller's variational principle -- Resonance state expansions in nuclear physics -- Mittag-Leffler expansions in nuclear physics -- On the analytical continuation of the partial wave S-matrix using complex scaling techniques -- Calculation of resonant wave functions in nuclear physics -- The use of Gamow functions in nuclear problems -- Resonances as an Eigenvalue

problem -- A model for studying time dependent quantum mechanical processes and its application for quasi-stationary states -- Time-dependent dynamics applied to electron transfer -- Semiclassical description of resonances -- Regge poles and atom-molecule diffraction -- Energy shifts and widths in atomic and molecular physics: Multichannel approach -- Two study cases in the calculation of resonances using the multichannel Schrödinger equation -- Multichannel complex scaled Titchmarsh Weyl theory a model for diatomic fragmentation -- On the way to a multiconfiguration treatment of resonance phenomena in atoms -- Resonant states in the microscopic cluster model -- A note on the cluster model and complex scaling -- Complex scaling applied to trapping of atoms and molecules on solid surfaces -- On a theorem for complex symmetric matrices and its relevance in the study of decay phenomena -- Creation of long range order in amorphous condensed systems -- The Iertorpet symposium view on a generalized inner product.

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### Sommario/riassunto

Scattering theory is of interest to physicists and to chemists and has a wide variety of applications, but it also presents a considerable challenge to mathematicians, including numerical analysts. Within the Schrödinger picture in this volume are collected the various theoretical and mathematical treatments of scattering together with a host of reviews of its applications to atomic and nuclear physics, to surface physics and chemistry, for example trapping of atoms on surfaces, and to amorphous condensed systems. The reviews give a concise and pedagogically useful presentation of the state of the art, and may serve as introductions for newcomers, in particular for graduate students.

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