

BOOK REVIEW

The Calculation of Atomic Collision Process

By Kenneth Smith, Wiley-Interscience 1971,

The book is divided into two parts, the first dealing with single channel problems and the second dealing with many channel problems. The book is primarily aimed at graduate students taking a two semester course in atomic collisions and younger scientists who might be interested in this field. This makes the scope of the book rather limited. The first part consists of elementary topics which are easily understood by a graduate student. Section 1.4 on the second order ordinary differential equations is well written and will be of considerable help to those who want to work with computers in solving such equations. The emphasis of the book is to get meaningful algorithms for actual computations.

The second part starts with a section on Eigenfunction Expansion method, which forms the main theme of the book. This method is of particular value for Astrophysics and Plasma physics application and workers in these fields will find the book quite useful. However, this technique is in general rather poor for calculating excitation cross-sections for levels which are widely separated in energy from their neighbours. It would have been more useful if the author had also discussed in a little greater detail the method of dipole approximation which is most satisfactory for excitation processes of large oscillator strengths and small energy differences. Sections 2.2 and 2.4 on Racah Algebra and Numerical Methods for Coupled Differential Equations, respectively, will be useful for many active workers in the field.

A number of good problems are included in the book which will surely increase the understanding and the capabilities of readers to handle practical problems. The book is a welcome addition to the literature for the 'Computer Experimentalist'.

The book thus covers only a limited aspect of the calculation of atomic collision process and as such the title of the book should not be taken too generally.

— B. K. G.

In typical collision calculations, matrices vary in size from $2K \times 2K$ to $200K \times 200K$, depending on the complexity of the atomic target. The formation of the continuum-continuum part of the $N+1$ electron Hamiltonian is the. 4 B M McLaughlin, C P Ballance, M S Pindzola and A Müller. The goals of the. PAMOP: Petascale Atomic, Molecular and Optical Collision Calculations. 5. In addition to the direct photoionization process, indirect excitation processes occur for the interaction of a photon with the $4d^{10}5s^2S_{1/2}$ ground-state and the metastable $4d^{10}4f^2F_{5/2,7/2}$ levels of the Xe^{7+} ion. These intermediate resonance states can then decay to the ground state or energy accessible excited states. Recent papers in Atomic and Molecular collision. Papers. People. Bayesian atomic structure calculations for collisional problems. The calculations of collisional processes require an accurate description of the target. In general, the atomic structure is obtained through tedious iterations in which a variety of configurations and parameters are chosen to minimize more. The calculations of collisional processes require an accurate description of the target. In general, the atomic structure is obtained through tedious iterations in which a variety of configurations and parameters are chosen t The calculations of the charge-exchange and Coulomb deexcitation rates in collisions of $(p\mu)^n$, $(d\mu)^n$, and $(t\mu)^n$ muonic atoms in the excited states $n = 3, 4, 5$ with the hydrogen isotopes p, d, t are presented in comparison with the conventional adiabatic approach. c 2002 MAIK "Nauka/Interperiodica". 1. INTRODUCTION. All the peculiarities of mesic atomic processes mentioned above are taken into account in the method of calculation described below. The Hamiltonian $H_{E\ddagger}$ of the problem in Jacobi co-ordinates (R, r) has the form (in mesic atomic units, m.a.u., $e = m\mu = 1$). $H_{E\ddagger} = \hat{a}^{-1} 2M$.