# of Book: Many-Particle Quantum Dynamics in Atomic and Molecular Fragmentation

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Title of Book: Many-Particle Quantum Dynamics in Atomic and Molecular Fragmentation
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Abstract / Description: This is the first comprehensive treatment of the interactions of atoms and molecules with charged particles, photons and laser fields. Addressing the subject from a unified viewpoint, the volume reflects our present understanding of many-particle dynamics in rearrangement and fragmentation reactions such as electron capture, target and projectile ionisation, photoabsorption and Compton scattering, collisional breakup in Coulomb systems, and dissociative ionisation. The individual chapters, each written by leading experts, give a concise picture of the advanced experimental and theoretical methods. The book also describes experimental methods such as recoil-ion momentum spectroscopy (RIMS), electron microscopy (REMI), and many-particle time-of-flight and imaging techniques. Theoretical approaches treated include the three-body Coulomb problem, R- and S-matrix as well as classical approaches, close-coupling methods, and density-functional theory.
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Many-Particle Quantum Dynamics in Atomic and Molecular Fragmentation by Joachim Ullrich, 9783642056260, available at Book Depository with free delivery worldwide. Addressing the subject from a unified viewpoint, the volume reflects our present understanding of many-particle dynamics in rearrangement and fragmentation reactions. show more. Product details. Format Paperback | 515 pages. Our experimental work focuses on the quantum dynamics of simple ionic systems ranging from atoms to cold molecules and clusters. This research has direct impact on the field of quantum chemistry and on basic few-body quantum physics regarding the dynamics of systems including several particles in highly excited or strongly correlated motion. It leads to the destruction and chemical conversion of the molecules and produces further chemically active radicals as fragments. Predicting the rates and the product channels for these reactions requires detailed knowledge of inner-molecular dynamics actively studied worldwide both experimentally and theoretically. J. Ullrich \zP. Shevelko (Eds.) Many-Particle Quantum Dynamics in Atomic and Molecular Fragmentation. With 179 Figures. This book aims to give a comprehensive view on the present status of a tremendously fast-developing field - the quantum dynamics of fragmenting many-particle Coulomb systems. In striking contrast to the profound theo- retical knowledge, achieved from extremely precise experimental results on the static atomic and molecular structure, it was only three years ago when the three-body fundamental dynamical problem of breaking up the hydro- gen atom by electron impact was claimed to be solved in a mathematically consistent way. Start by marking “Many-Particle Quantum Dynamics in Atomic and Molecular Fragmentation” as Want to Read: Want to Read saving… Want to Read. This is the first comprehensive treatment of the interactions of atoms and molecules with charged particles, photons and laser fields. Addressing the subject from a unified viewpoint, the volume reflects our present understanding of many-particle dynamics in rearrangement and fragmentation reactions. Get A Copy. Amazon.