# 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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View project. Book. Many-Particle Quantum Dynamics in Atomic and Molecular Fragmentation. January 2003. Joachim Ullrich. Viatcheslav Shevelko. 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 [Show full abstract] 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. Many-Particle Quantum Dynamics in Atomic and Molecular Fragmentation (Springer Series on Atomic, Optical, and Plasma Physics). 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. Show more. Addressing the subject from a unified viewpoint, it 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 describes experimental methods such as recoil-ion momentum spectroscopy (RIMS), electron microscopy (REMI), and many-particle tim 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.