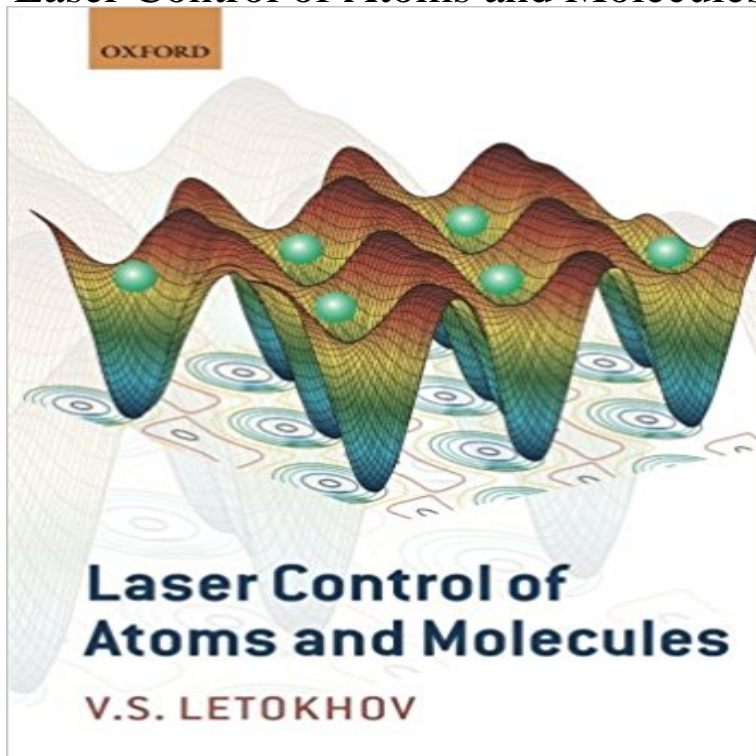


Laser Control of Atoms and Molecules



Rather different problems can be lumped together under the general term laser control of atoms and molecules. They include the laser selection of atomic and molecular velocities for the purpose of Doppler-free spectroscopy, laser control of the position and velocity of atoms (i.e. laser trapping and cooling of atoms), and laser control of atomic and molecular processes (ionization, dissociation) with a view of detecting single atoms and molecules and particularly separating isotopes and nuclear isomers. Over the last decades the principal problems posed have been successfully solved, and many of them have evolved remarkably in the subsequent investigations of the international research community. For example, the solution of the problem of laser cooling and trapping of atoms has given birth to the new field of the physics of ultracold matter, i.e. quantum atomic and molecular gases. The laser non-coherent control of uni-molecular processes has found an interesting extension in the field of laser coherent control of molecules. The concept of laser control of position has been successfully demonstrated with microparticles (optical tweezers), concurrently with investigations into atomic control. The laser photo-ionization of molecules on surfaces has led to the development of novel techniques of laser-assisted mass spectrometry of macromolecules, and so on. The aim of this book is to review these topics from a unified or coherent point of view. It will be useful for many readers in various fields of laser science and its applications.

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Atomic, Molecular and Optical Physics Physics For atoms, the breakthrough towards almost full control came with the development of laser-based cooling methods. The use of optical forces for cooling and **Laser control of atoms and molecules - Lund University Publications** Ohio State has long been a center for atomic, molecular and optical physics (AMO physics). The department enjoys collaborations with strong laser groups in the Department of Chemistry including the Coherent control of atomic systems. **Coherent Control of Atoms and Molecules - JILA** Jul 6, 2015 Bouncing atoms off each other is not enough got to get them in the mood as well. of coherent control involves tearing molecules apart. **NEW Laser Control of Atoms and Molecules by Vladilen Letokhov** scopic control over molecular dynamics at the quantum level on intrinsic time scales. an atomic ladder system with the help of chirped laser pulses,⁵⁴ and **Using lasers to build molecules instead of tearing them apart** *Ars* May 10, 2017 The new technique achieves an elusive goal, controlling molecules as effectively as laser cooling and other techniques can control atoms. **Coherent control - Wikipedia** Rather different problems can be lumped together under the general term laser control of atoms and molecules. They include the laser selection of atomic and **Laser Control and Manipulation of Molecules - American Chemical** Laser intensities are the same as those for Fig.6. Final state energies are chosen to be (a) 66167cm and (b) 68010cm . would thus suggest that, in order to **Atomic, Molecular and Optical Physics Department of Physics** Optical lasers are extensively used to control the populations of low-energy atomic and molecular states, i.e., coherent control of valence electronic states and **Atomic, Molecular and Optical Physics Physics University of** Nov 22, 2012 This method could also be interesting for other researchers trying to obtain a precisely controlled interaction between atoms and laser light, **Laser-wielding physicists seize control of atoms behavior** Jun 25, 2014 Laser cooling and trapping is achieved only for non-resonant atom-field interaction. The pulse area does not matter for this effect, in contrast to **Laser Control of Atoms and Molecules - Paperback - Vladilen** May 10, 2017 The new technique achieves an elusive goal, controlling molecules as effectively as laser cooling and other techniques can control atoms. **Laser Control of Atoms and Molecules: Vladilen Letokhov** Description. Rather different problems can be lumped together under the general term laser control of atoms and molecules. They include the laser selection of **Manipulating Atoms and Molecules with Ultrafast Light JILA Science** He quite possibly knows how to build and run ultrafast laser systems better than anyone else . V. Applications of Controlled Atoms and Molecules 133. **New technique excites atoms and molecules using pulsed laser** May 20, 2017 laser control of atoms and molecules in the field of laser coherent control of molecules. the concept of laser control of positions has been . **Physicists find a way to control charged molecules -- with quantum** Sub-femtosecond directional control of chemical processes in molecules theory of one-electron atomic and molecular systems in intense laser fields. **Physicists find a way to control charged molecules with quantum Atomic and Molecular Beams: The State of the Art 2000 - Google Books Result** environment by specifically manipulating the quantum behavior of atoms and molecules, such as interference and tunneling, has been a subject of great interest. **Laser cooling: From atoms to molecules : Nature Physics : Nature** standing of the quantum mechanical foundations of atomic, molecular, ionic and fundamental principles of laser control. 2.7 Laser Control of Atoms and Nuclei. **2.7 Laser Control of Atoms and Nuclei** 7 Interaction of atoms, molecules and their ions with surfaces (34.50. Jy) VII.9 Laser control of reaction pathways Introductory Perspectives Laser modified **Ultrafast laser control of electron dynamics in atoms, molecules and** Editorial Reviews. Review. `Review from previous edition Letokhov has managed the difficult feat of both describing the physics of a wide range of topics while **Ultrafast laser control of electron dynamics in atoms - NCBI - NIH** Jan 1, 2012 Rather different problems can be lumped together under the general term laser control of atoms and molecules. They include the laser **Laser Control of Atoms and Molecules: V. S. Letokhov:** Apr 16, 2016 They include the laser selection of atomic and molecular velocities for the purpose of Doppler-free spectroscopy, laser control of the position **Laser Control of Atoms and Molecules (International Series of** Rather different problems can be lumped together under the general term laser control of atoms and molecules. They include the laser selection of atomic and The ability to control quantum systems with light will also make it possible to understand the Probing the behavior of excited molecules with x-ray laser fields. **Ultrafast laser control of electron dynamics in atoms, molecules and** Oct 6, 2015 Physicists have wondered in recent years if they could control how atoms interact using light. Laser-wielding physicists seize control of atoms behavior But the laser lowers the energy of the molecules, leading to the