

Strong Laser Field Processes: From Attophysics to Coherent Control of Nuclear Processes

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Abstract.

Recent progress in laser technology has brought a tremendous advance in the generation of ultrashort high intensity laser pulses. The availability of these pulses opens the possibility to expose matter to ultrahigh intensities in unprecedented short times. One impressive consequence is the realization of xuv attosecond pulses, which is the topic of the first part of my talk. An exciting, potential application of attosecond pulses is the investigation of multielectron processes in matter induced by strong laser fields. Understanding of these phenomena is of central interest for the coherent control of matter and will be discussed in the second part of my talk. Finally, in the last part I will present novel ideas on the use of ultrastrong lasers for the coherent control of nuclear processes.