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Semi-classical quantum view of an intense laser-atom interaction

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The study of an intense laser field interacting with an atom is a fundamental problem in AMO physics.The study of strong-field physics has advanced to a state that quantitative tests of theoretical models are now possible experimentally. This is particularly important to identify the universality of all strong-field phenomena, such as above-threshold ionization (ATI), high harmonic generation and multiple ionization. In this talk, a review of laser-atom interaction will be given and discussed in the context of a semi-classical model of a field- driven electron interacting with its parent core. Experiments will be presented which illustrate the appropriateness of the semi-classical description, the scaling with laser parameters and the physics associated with the formation of light pulses on the atomic time scale (attosecond).