

Abstract Submitted
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Laser-Phase Dependence for Electron Capture in Laser-Assisted Proton – Hydrogen Collisions¹ THOMAS NIEDERHAUSEN, UWE THUMM, James R. MacDonald Laboratory, Kansas State University, Manhattan, KS 66506-2604, USA — We calculate electron capture probabilities for ion–atom collisions in a strong laser field (5×10^{13} W/cm²) by numerically solving the 3-dimensional time–dependent Schrödinger equation. For circularly polarized laser fields and an impact energy of 1.2 keV, we find a substantial modification of the electronic dynamics in the p – H collision system as compared to field-free collisions. In particular, we observe a strong dependence on the laser phase and the impact parameter for electron capture, which can be explained using semi-classical arguments.

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