

# Modeling Atomic Dynamics in Strong Elliptically Polarized Laser Fields

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We have developed a nonperturbative time-dependent approach for treating different dynamics of few-body quantum systems [1,2]. It based on combination of nondirect product discrete-variable representation [3,4] with splitting-up method [1].

With this approach we have analysed the polarization of high-harmonics spectrum of a hydrogen atom in the elliptically polarized laser field of  $2 \times 10^{13}$  W/cm<sup>2</sup> intensity [4]. In present report we extend the analysis in the region of more stronger fields.

We also report our calculation with a wave-packet propagation method [1,5] of the antihydrogen formation rate in the positron-antiproton collisions stimulated by resonant laser fields. The problem of possible controlling the antihydrogen formation is an actual one for the current investigations of efficient methods for the production of cold antihydrogen [6].

## References

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