

Abstract Submitted
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Signatures of field-induced intramolecular quantum interference in high-order harmonic generation by laser-irradiated homonuclear diatomics VLADIMIR USACHENKO, Institute of Applied Physics, National University of Uzbekistan, Tashkent, 100174, Uzbekistan, VYACHESLAV KIM, Institute of Ion-Plasma and Laser Technologies, Tashkent 700125, Uzbekistan, PAVEL PYAK, Physics Department, National University of Uzbekistan, Tashkent, 100174, Uzbekistan — We report about the results of our theoretical study of the strong-field phenomenon of high-order harmonic generation (HHG) in homonuclear diatomics H_2^+ and H_2 irradiated by a high-intensity laser field of mid-infrared wavelengths corresponding to intermediate values of the so-called *Keldysh parameter* ($\gamma \leq 1$). The problem is addressed within the *length-gauge* (LG) formulation of *strong-field approximation* (SFA) [1] additionally exploiting the *density-functional-theory* (DFT) method for numerical composition of initial (laser-free) molecular state using the routines of GAUSSIAN-03 code [2]. The results of our present LG-VGA calculation well reproduce a pronounced interference-related minimum arising in high-frequency region of respective molecular HHG spectra and suggesting clear signatures of the field-induced *intramolecular* interference [3] corresponding to photoelectron emission to intermediate continuum states from different atomic centers.

[1] M. Lewenstein *et al.* *Phys.Rev.A* **49**, 2117 (1994)

[2] M. J. Frisch and J. A. Pople. **Gaussian-03, Revision A.1** (Gaussian, Inc., 2003 Pittsburgh, PA)

[3] J. Itatani *et al.* *Nature (London)* **432**, 867 (2004); J. P. Marangos, *ibid.* **435**, 435 (2005); T Kanai *et al.* *ibid.* **435**, 470 (2005).

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