

Abstract Submitted
for the DAMOP16 Meeting of
The American Physical Society

Angular dependence of the attosecond time delay in the H_2^+ ion¹ ANATOLI KHEIFETS, Australian National University, VLADISLAV SEROV, Saratov State University, Russia — Angular dependence of attosecond time delay relative to polarization of light can now be measured using combination of RABBIT and COLTRIMS techniques [1]. This dependence brings particularly useful information in molecules where it is sensitive to the orientation of the molecular axis [2]. Here we extend the theoretical studies of [2] and consider a molecular ion H_2^+ in combination of an attosecond pulse train and a dressing IR field which is a characteristic set up of a RABBIT measurement. We solve the time-dependent Schrödinger equation using a fast spherical Bessel transformation (SBT) for the radial variable [3], a discrete variable representation for the angular variables and a split-step technique for the time evolution. The use of SBT ensures correct phase of the wave function for a long time evolution which is especially important in time delay calculations. To speed up computations, we implement an expanding coordinate (EC) system [4] which allows us to reach space sizes and time periods unavailable by other techniques. [1] S. Heuser *et al* arxiv:1503.08966, 2015, Nat. Phys. submitted [2] V. V. Serov *et al* Phys. Rev. A, **87**:063414, 2013 [3] V. V. Serov arXiv:1509.07115, 2015 [4] V. V. Serov *et al*, Phys. Rev. A, **75**:012715, 2007

¹Australian Research Council DP120101805

Anatoli Kheifets
Australian National University

Date submitted: 27 Jan 2016

Electronic form version 1.4