Abstract Submitted
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Modeling carrier-envelope phase effects on frustrated tunnel ionization[1] B.A. DEHARAK, J.P. ZIEGEL, V.C. VITERI-PFLUCKER, Illinois Wesleyan University, R.D. GLOVER, D. CHETTY, A.J. PALMER, I.V. LITVINYUK, R.T. SANG, Griffith University — The fact that an electron can tunnel out of the potential well of its parent atom or molecule in the presence of a strong laser field is the basis of a number of strong-field phenomena such as above threshold ionization, and nonsequential multiple ionization. In both of those cases the parent is left in an ionized state. However, there is a chance that after the electron has tunneled it will return to a bound state – a process known as frustrated tunnel ionization (FTI) [Nubbemeyer, T., et al. Phys. Rev. Lett. 101(23): 233001 (2008)]. Here we present calculations of few-cycle laser pulse FTI yield for argon as a function of carrier-envelope phase using the rescattering model [P.B. Corkum, Phys. Rev. Lett. 71, 1994 (1993)] with the addition of a coulomb potential term when dealing with the "free" electron. We will contrast the use of different coulomb potentials and compare these calculations to some of our recently obtained experimental results.

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