

Abstract Submitted  
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**Ionization of an Highly Excited Hydrogen atom in parallel Electric and Magnetic fields** TÜRKER TOPÇU, FRANCIS ROBICHEAUX, Department of Physics, Auburn University, AL — In a recent paper, Mitchell *et al* [Phys. Rev. Lett. **92**, 073001 (2004)] investigated the ionization of a classical hydrogen atom in parallel electric and magnetic fields. They reported epistrophic self-similar pulse trains of ionized electrons attributed to the classical chaos induced by the magnetic field. We study hydrogen atom in an excited state with  $n \sim 80$  in parallel external fields as an example of an open, chaotic *quantum* system in the time domain. We investigate the effect of interference between the outgoing pulse trains which is absent in the classical picture. We look at interference effect as a function of the energy since Schrödinger equation does not scale as the classical equations of motion do. We compare and contrast our quantum results with the classical results of Mitchell *et al*.

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