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**Turnstile approach to ionization of the hydrogen atom in crossed fields** KORANA BURKE, KEVIN A. MITCHELL, University of California Merced — The motion of the electron of a hydrogen atom placed in crossed external electric and magnetic fields exhibits chaotic behavior. We explore the chaotic ionization in this system by appropriately choosing the surface of section and studying the geometry of a phase space turnstile (a geometric structure that regulates the ionization process). This approach has been used in the past to analyze numerous ionization and escape phenomena, e. g. hydrogen atom in parallel fields, kicked hydrogen atom and molecular dissociation. The choice of the surface of section in crossed fields is much more challenging than in the parallel fields case due to the reduced symmetry. We show the procedure for choosing the surface of section, computing the turnstile and we give insights into the ionization process.

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