Few-cycle strong-field ionization of atomic hydrogen with elliptically polarized light.¹ NICOLAS DOUGUET, KLAUS BARTSCHAT, Drake University — We consider strong-field ionization of atomic hydrogen by elliptically polarized light in the long-wavelength regime (800 nm). By solving the time-dependent Schrödinger equation, we analyze the ionization spectra at various peak intensities up to $4 \times 10^{14} \text{ W/cm}^2$. The calculations are performed with the length and velocity forms of the electric dipole operator. In particular, we compare the extreme cases of circularly and linearly (studied in [1]) polarized light. Starting from an oriented atomic state, we also consider the dynamics responsible for circular dichroism [2], from the multiphoton to the tunneling regime. A model based on the strong-field approximation is employed in an attempt to predict the variation of the dichroism as a function of the laser peak intensity. Finally, we analyze the tunneling time for photo-ionization in the strong-field regime. [1] A. N. Grum-Grzhimailo, B. Abeln, K. Bartschat, D. Weflen, and T. Urness, Phys. Rev. A 81 (2010) 043408. [2] M. Ilchen et al., Phys. Rev. Lett. 118 (2017) 013002.

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