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Dichroism in ionization of oriented Li(2p) atoms by circularly polarized laser radiation.[1] DAVID ATRI SCHULLER, KLAUS BARTSCHAT, Drake University, NICOLAS DOUGUET, Kennesaw State University, NISH DE SILVA, SANTWANA DUBEY, DANIEL FISCHER, Missouri University of Science and Technology — In this joint theoretical and experimental project, we investigate the response of laser-excited Li atoms prepared in the (2p,$m=+1$) state to circularly polarized infrared (IR) radiation with the same or opposite helicity of the initial state. Our calculations are based on the single-active electron (SAE) approximation, in which the valence electron is moving in the field of the He-like $Li^+(1s^2)$ core and subjected to few-cycle intense laser pulses. The peak intensity, pulse length, and wavelength of the probe laser are varied to simulate the experimental conditions. We study the dichroism $D = (S_{\rm co} - S_{\rm counter})/(S_{\rm co} + S_{\rm counter})$, where $S_{\rm co}$ and $S_{\rm counter}$ are the signals obtained for co-rotating and counter-rotating pump and probe laser fields, respectively. Results will be presented for both the energy spectrum and the momentum distribution of the ejected electrons. Good agreement between theory and experiment is obtained, thereby allowing us to study detailed effects such as resonant excitation via Rydberg states and the helicity-dependent appearance of the Autler-Townes effect.

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