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Magnetic dichroism in the few-photon ionization of un-polarized and polarized lithium atoms[1] SANTWANA DUBEY, BISHNU ACHARYA, KEVIN ROMANS, NISHSHANKA DE SILVA, KATRINA COMPTON, KYLE FOSTER, COLE RISCHBIETER, ONYX RUSS, DANIEL FISCHER, Missouri University of Science and Technology — In the last decade, the interaction of atoms with circular and elliptically polarized light has been studied extensively. For tunnel-ionization in intense and CEP stabilized laser pulses, it was found that the electron angular distribution exhibits an angular shift. This shift was interpreted to be caused by the finite tunneling time of the active electron that translates into a shift of the mean emission angle due to an angular streaking mechanism often referred to as attoclock. Here, we report on an experiment where the angular distribution in the two- and three-photon ionization of lithium is investigated. The lithium target can be prepared un-polarized in the 2s ground state or polarized in the 2p (m_l=+1) state. A shift in the photo-electron angular distributions is observed that remains even for a fully linearly polarized light if the target atoms are initially excited with a polarization direction perpendicular to ionizing electric field. The observed angular shift is a magnetic dichroism that can interpreted in terms of non-vanishing phase angles between contributing partial waves with different orbital angular momentum. The resemblances and differences of the presently observed angular shift and the attoclock mechanism will be discussed.

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