

Abstract for an Invited Paper
for the DAMOP11 Meeting of
The American Physical Society

Photoionization of Li¹

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The time-dependent close-coupling approach to multiple photoionization of lithium is presented. Double photoionization of lithium can be treated as a two-electron ejection process where the outgoing electrons move in the field of a “frozen-core” $\text{Li}^{2+} 1s$ state. Recent calculations of this process have resulted in total and triple differential cross sections that are in good agreement with other close-coupling approaches. The time-dependent approach can also be extended to treat the interaction of all three lithium electrons, as is required if triple photoionization is examined, that is, the simultaneous ejection of all three electrons from lithium. The most detailed information about this process is found in the fully angular and energy differential cross sections, which provide information as to how the ionized electrons leave the atom. We present our formulation of the fully differential cross section expression, and provide some convergence studies of the angular distributions.

¹The Los Alamos National Laboratory is operated by Los Alamos National Security, LLC for the National Nuclear Security Administration of the U.S. Department of Energy under Contract No. DE-AC5206NA25396.