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Outer-shell photodetachment of Li- in the vicinity of inner-shell thresholds[1] T. W. GORCZYCA, Western Michigan University, S. T. MANSON, Georgia State University — Recent work has shown that the photoionization of outer shells of atoms are profoundly affected by correlation in the form of interchannel coupling in the vicinity of inner-shell thresholds [1,2]. Since negative ions, by their very nature, are much more highly-correlated than atoms, it is expected that these effects should be even more pronounced in negative ion photodetachment. Thus, we have started a program to explore this effect, and we have looked at the photodetachment of the simplest closed-shell negative ion with more than one shell, Li- in the ground 1s22s2 state, using a version of the Belfast R-matrix methodology that has been modified to accommodate photodetachment [3]. The results show that the outer-shell photodetachment cross sections leading to the ground state 1s22s state of Li, along with a number of excited 1s2nl states (detachment plus excitation), are indeed very strongly altered owing to the interchannel coupling with the inner-shell photodetachment channels. Work supported partially by the NASA and DOE. [1] W. Drube, et al, J. Phys. B 46, 245006 (2013); [2] D. A. Keating, et al, Phys. Rev. A 98, 013420 (2018); [3] T. W. Gorczyca, et al, Phys. Rev. A 68, 050703(R) (2003).

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