Abstract Submitted
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Target electron ionization in Li^{2+}-Li collisions: A multi-electron perspective[1] M.D. ŚPIEWANOWSKI, York University, L. GULYÁS, Institute for Nuclear Research, Hungarian Academy of Sciences (ATOMKI), M. HORBATSCH, T. KIRCHNER, York University — The recent development of the magneto-optical trap reaction-microscope has opened a new chapter for detailed investigations of charged-particle collisions from alkali atoms. It was shown that energy-differential cross sections for ionization from the outer-shell in O^{8+}-Li collisions at 1500 keV/amu can be readily explained with the single-active-electron approximation. Understanding of K-shell ionization, however, requires incorporating many-electron effects. An ionization-excitation process was found to play an important role [1]. We present a theoretical study of target electron removal in Li^{2+}-Li collisions at 2290 keV/amu [2]. The results indicate that in outer-shell ionization a single-electron process plays the dominant part. However, the K-shell ionization results are more difficult to interpret. On one hand, we find only weak contributions from multi-electron processes. On the other hand, a large discrepancy between experimental and single-particle theoretical results indicate that multi-electron processes involving ionization from the outer shell may be important for a complete understanding of the process.

[1] T. Kirchner et al., Phys. Rev. A 89, 062702 (2014);
[2] M. D. Śpiewanowski et al., accepted for publication in J. Phys. Conf. Series (2015).

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