

Abstract Submitted
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Excitation-ionization of lithium atoms by fast ion impact: the independent-electron model and beyond¹ TOM KIRCHNER, NARIMAN KHAZAI, Department of Physics and Astronomy, York University, LASZLO GULYAS, Institute of Nuclear Research, Hungarian Academy of Sciences — We report on a theoretical study of one-electron and two-electron processes in the ion-impact-induced ionization of lithium atoms [1]. An independent-electron model (IEM) description based on basis-generator-method and continuum-distorted-wave-eikonal-initial-state single-particle probabilities is applied to calculate $1s$ and $2s$ vacancy production single-differential cross sections, which were measured with the recently developed MOTReMi apparatus [2]. We find that the IEM predicts a considerable role of two-electron excitation-ionization processes in $1s$ -vacancy production, but is not sufficient to explain the data. Replacing the IEM by an independent-event model for one of the contributing excitation-ionization processes and also taking a shake-off process into account improves the comparison with the measurements significantly.

[1] T. Kirchner *et al.*, Phys. Rev. A **89**, 062702 (2014).

[2] D. Fischer *et al.*, Phys. Rev. Lett. **109**, 113202 (2012).

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