

Abstract Submitted  
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**Effects of screening of the final-state  $A^+$  ion static potential within the  $C_{60}$  on  $A@C_{60}$  photoionization.**<sup>1</sup> VALERIY DOLMATOV, EMRE GULER, University of North Alabama, STEVEN MANSON, Georgia State University — We perform a novel, trial study of photoionization of an atom  $A$  in the  $A@C_{60}$  endohedral fullerene within the framework of the model [1] which regards  $C_{60}$  as a conducting sphere, approximated by an attractive square-well potential  $V_{C_{60}}(r)$  of a given inner radius, depth, and thickness. In the present study, we explore the possible shielding, both partial and complete, of the Coulomb potential of the final-state  $A^+$  ion by the  $C_{60}$  in the region between the inner and outer radii of  $V_{C_{60}}(r)$ . This effect has not been studied previously and its significance remained unknown. Using the example of  $Ne@C_{60}$ , we find that, fortunately, the effect of the shielding on the photoionization of endohedral atoms is relatively small; no more than 20% near threshold for a complete screening, and much less at higher energies. Thus, the results and predictions of earlier studies are not significantly impacted by this shielding and future studies may ignore the shielding effect, to a good approximation.

[1] V. K. Dolmatov. In: *Theory of Confined Quantum Systems: Part Two*, edited by J. R. Sabin and E. Brändas, Advances in Quantum Chemistry (Academic Press, New York, 2009), Vol. 58, pp. 13-68.

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