

Abstract Submitted
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Hyperfine interactions and charge transfer processes in ultracold atom-ion collisions DIEGO VALENTE, ROBIN CÔTÉ, University of Connecticut — In some atom-ion scattering systems, the hyperfine interaction may be neglected, e.g. if the nuclear spins of both atom and ion are null, or if the hyperfine coupling constant is very small. In other systems, this is not the case. Collisions between Be and Be⁺ provide access to both types, depending on the nuclear spin of the Be isotope considered. We investigate the role of hyperfine interactions by considering collisions between Be atom-ion isotopes with zero nuclear spin (e.g. ⁸Be or ¹⁰Be), and ⁷Be (with a nuclear spin of 3/2). For identical nuclei, symmetry considerations must be taken into account in computing charge transfer cross sections. Precise calculations of these are presented, which could be valuable for several ultracold trapped ion applications and quantum computing experiments.

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