

Abstract Submitted
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Bound-state models in the electron capture process¹ ALLISON HARRIS, ALEX PLUMADORE, Illinois State Univ — Electron capture processes play an important role in many physical systems, from fusion reactors to astrophysical processes. In an electron capture collision, an incident ion collides with a target atom, captures an electron, and leaves the collision as a bound state. Recent experimental results for $\text{He}^{\{+\}} + \text{He}$ single electron capture show previously unobserved features in the differential cross section. Some of these features have been attributed to Fraunhofer diffraction effects, while others remain unexplained by theory. We present results from a fully quantum mechanical model and compare with experimental results. Using our model, we explore the effect of treating the projectile as either a single particle or a two-particle bound state. We also study the effect of the nuclear potential on the capture process.

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