Nuclear structure corrections for $\mu^4\text{He}^+$ and $\mu^3\text{He}^+$ spectroscopy\(^1\) NIR NEVO DINUR, TRIUMF, Canada, CHEN JI, ECT* and INFN, Italy, OSCAR HERNANDEZ, TRIUMF and UBC, Canada, SONIA BACCA, TRIUMF and University of Manitoba, Canada, NIR BARNEA, The Hebrew University of Jerusalem, Israel — The proton charge radius was recently determined from muonic hydrogen spectroscopy [1] with tenfold improved precision but 7.9σ disagreement with the accepted value, leading to the “proton radius puzzle”. To further investigate, and to obtain precise radii, these measurements were repeated in $\mu^4\text{He}^+$ and $\mu^3\text{He}^+$ [2]. This may also shed light on the discrepancy between isotope-shift measurements of the $^4\text{He}–^3\text{He}$ radius difference. However, the precision of radii determined from the muonic experiments is limited by the uncertainties in the nuclear structure corrections [2]. We present first \textit{ab-initio} calculations of these corrections [3,4] that reduced the uncertainties from ~20% to the few percent goal.


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