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Scaling behavior of the ground-state antihydrogen yield from CTMC simulations

Poster is presented on CTMC simulation and antihydrogen level population calculation results.
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Summary

Antihydrogen production has reached such a level that precision spectroscopic measurements of its properties are within reach. In particular, the ground-state level population is of central interest for experiments aiming at antihydrogen spectroscopy. The positron density and temperature dependence of the ground-state yield is a result of the interplay between recombination, collisional, and radiative processes. Considering the fact that antihydrogen atoms with the principal quantum number n=15 or lower quickly cascade down to the ground state within 1 ms, the number of such states is adopted as a measure of useful antihydrogen atoms. It has been found that the scaling behavior of the useful antihydrogen yield is different depending on the positron density and positron temperature.

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