

Trapping Antihydrogen

A different mixing approach

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The present focus of the two working antihydrogen experiments at CERN is to trap antihydrogen in multipole atom traps. The mixing method that has produced most antihydrogen to date involves injecting antiprotons as projectile particles into a positron cloud of target particles located in a so called nested trap. This scheme has several shortcomings. The states and velocities of the resulting antihydrogen are not conducive to trapping, the dynamics of the interaction are difficult to disentangle and the process may be negatively influenced by the presence of the multipole fields. A short review will be given of what has been learned to date and an outline of a different scheme described which pulls together several new plasma physics techniques which have been developed recently both without[1] and within the ALPHA collaboration. An effort will be made to underline how this new approach may help to avoid some of the difficulties of the classic nested trap.

References

- [1] J. R. Danielson, T. R. Weber, and C. M. Surko, *Appl. Phys. Lett.* **90**, 081503 (2007).
- [2] J.Fajans, this conference.