

Progress with Cold Antihydrogen

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Since 2002, when cold antihydrogen was first produced in the laboratory, there has been an explosion of activity in this field, both experimental and theoretical. Two experiments at CERN, ATHENA [1] and ATRAP [2], both utilising a nested Penning trap technique [3], have driven these advances. Insights have been gained into antihydrogen formation mechanisms and binding energies, the (positron) temperature dependence of antihydrogen formation and the velocity and spatial distributions pertaining to the emitted antihydrogen. We will review this material. Though much remains to be done, current knowledge is pointing the way towards precision spectroscopy with trapped antihydrogen. We attempt an anticipation of these developments and recall the physics motivations for undertaking these challenges.

References

1. e.g. M. Amoretti et al., 2002 Nature **419** 456
2. e.g. G. Gabrielse et al., 2002 Phys. Rev. Lett. **89** 213401
3. G. Gabrielse et al., 1988 Phys. Lett. A **129** 38