The mechanisms of antihydrogen formation

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Some years passed since the report of the first productions of cold antihydrogen by Athena Collaboration [1] and Atrap Collaboration [2] at CERN, but no clear answer has been given about the roles of the two mechanisms responsible of the antihydrogen formation.

A new preliminary analysis of the data acquired by the Athena Collaboration in different experimental conditions suggests that the 3-body recombination mechanism is dominant in the first tens of seconds of the process of overlapping of the injected antiproton cloud with the positron plasma in the nested Penning trap, while the radiative capture starts to become dominant afterwards.

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[1] M. Amoretti *et al.*, Nature **419**, 456 (2002).

[2] G. Gabrielse *et al.*, Phys. Rev. Lett. **89**, 213401 (2002)