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GBAR experiment : Classical freefall experiment of antihydrogen at rest in terrestrial gravitational field

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The measurement of the gravitational acceleration of the antihydrogen in the terrestrial gravitational field is a test of the weak equivalence principle for antimatter and a measurement of the fundamental property of antimatter which was first measured by the ALPHA experiment with 27% precision in 2023. Efforts from a few competitions for better precision have been made. The GBAR experiment aims to measure gravitational acceleration below 1% by producing the world's first ultra-cold antihydrogen based on antihydrogen ion cooling. The GBAR experiment has given deep R&D for ion production and the status of antihydrogen production with related CPT test will be reported.

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