

Towards Demonstrating Magnetic Trapping of Hydrogen in the HAICU Experiment

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If matter and antimatter were created equally at the Big Bang, then why did they not annihilate each other, leaving behind a barren universe? That our universe is dominated by matter with little antimatter is a mystery of modern physics. At CERN, the ALPHA (Antihydrogen Laser Physics Apparatus) collaboration is studying antihydrogen, investigating its atomic energy levels in a magnetic trap. I am part of the ALPHA Canada collaboration and am working on HAICU (Hydrogen Antihydrogen Infrastructure for Canadian Universities), an experiment aiming to raise our precision to cutting-edge levels. With HAICU, the goal is to develop and build the technologies that would enable us to use state-of-the-art quantum techniques such as Raman interferometry and Ramsey spectroscopy on antihydrogen—building the first-of-its-kind antiatom fountain!

In this presentation, I shall describe HAICU and talk about my progress simulating the trapping of hydrogen in our apparatus.

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