



独立行政法人理化学研究所 仁科加速器研究センター
第71回RIBF核物理セミナー
RIKEN Nishina Center for Accelerator Based Science
The 71st RIBF Nuclear Physics Seminar

High precision spectroscopy of antiprotonic atoms
new techniques to manipulate antimatter.

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According to the CPT theorem of particle physics, the "antiworld" constructed by replacing all the matter particles in the universe with antiparticles, inverting their spatial configuration, and reversing the flow of time - would be indistinguishable from our real matter world. Atoms made of antimatter, i.e., antiatoms should resonate at exactly the same characteristic frequencies as normal atoms. Any deviation, however small, would indicate that this fundamental symmetry of nature is broken. We have carried out high-precision laser spectroscopy of antiprotonic helium atoms at CERN for many years. The results indicate that the mass and charge of antiprotons and protons are equal to a precision of 9 digits. We here describe ongoing work to further improve this experimental precision. We are also constructing a superconducting radiofrequency Paul trap to confine antiprotons for long periods of time.

Jan. 8(Thu), 2009 15:00-
Nishina Hall, RIKEN

The seminar will be given in English.
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