Berliner Physikalisches Kolloquium

im Magnus-Haus, Am Kupfergraben 7, 10117 Berlin

Eine gemeinsame Veranstaltung der Physikalischen Gesellschaft zu Berlin e.V. (PGzB), der Freien Universität Berlin (FUB), der Humboldt-Universität zu Berlin (HUB), der Technischen Universität Berlin (TUB) und der Universität Potsdam (UP), gefördert durch die Wilhelm und Else Heraeus-Stiftung.

Am Donnerstag, dem **12. Januar 2012, um 18:30 Uhr**

spricht

Prof. Dr. Yasunori Yamazaki

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über das Thema

„Antimatter matters: Recent progress in cold antihydrogen research“

Moderation: Helmut Winter (HU Berlin)

Antihydrogen, the antimatter counterpart of hydrogen, is the simplest antimatter. At the same time, antihydrogen is stable in vacuum, which guarantees a long observation time for high precision spectroscopy. A comparison of the spectroscopic properties with those of hydrogen constitutes a stringent test of the CPT symmetry, the most fundamental law of physics.
Recently, experimentalists working on cold antihydrogen have achieved substantial progress. One approach is the trapping of antihydrogen atoms in a magnetic bottle consisting of an octupole magnet and a pair of mirror coils. Considering the bottle depth, the trapped antihydrogen atoms exhibit a temperature of less than 0.7 K. The other technique is the successful synthesis of antihydrogen atoms in a so-called cusp trap, where an anti-Helmholtz coil configuration is employed. In this case, the magnetic field has axial symmetry and thus allows one to extract antihydrogen atoms in a field-free region as an intensified and at the same time spin-polarized beam, which is the ultimate condition to realize high-resolution spectroscopy. With these achievements, the field of cold antimatter research is now ready to start real physics experiment such as high precision laser spectroscopy of the 1S-2S transition and microwave spectroscopy of the ground state hyperfine transitions.