

Physikalisches Kolloquium

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»Trapped antihydrogen: the ALPHA experiment at CERN«

Einführung: Th. Müller

It has been 100 years since Niels Bohr proposed his famous model for the hydrogen atom. It is thus very exciting that we are now on the brink of being able to experimentally study antihydrogen - the antimatter equivalent of hydrogen. The question to be addressed is fundamental and profound: "Do matter and antimatter obey the same laws of physics?" The so-called Standard Model of fundamental particles and interactions requires that hydrogen and antihydrogen have the same spectrum. At CERN in Geneva, the ALPHA collaboration is working to test this requirement by performing direct spectroscopic measurements on trapped atoms of antihydrogen. Antihydrogen atoms have been produced in quantity at CERN since 2002, when the ATHENA collaboration demonstrated how to mix cryogenic plasmas of antiprotons and positrons to produce low energy anti-atoms. I will discuss the newest development along the road to antihydrogen spectroscopy: magnetically trapped antihydrogen. We also have recently demonstrated a new technique to study the gravitational behaviour of antihydrogen atoms in free-fall. I will discuss the many developments necessary to realise trapped antihydrogen, and I will consider the future of this rapidly evolving field of study.

Freitag, 10.01.2014, 17 Uhr c.t.,

KIT, Campus Süd,

Otto-Lehmann-Hörsaal, Physik-Flachbau (Geb. 30.22).

Anschließend Nachsitzung im Gastdozentenhaus „Heinrich Hertz“