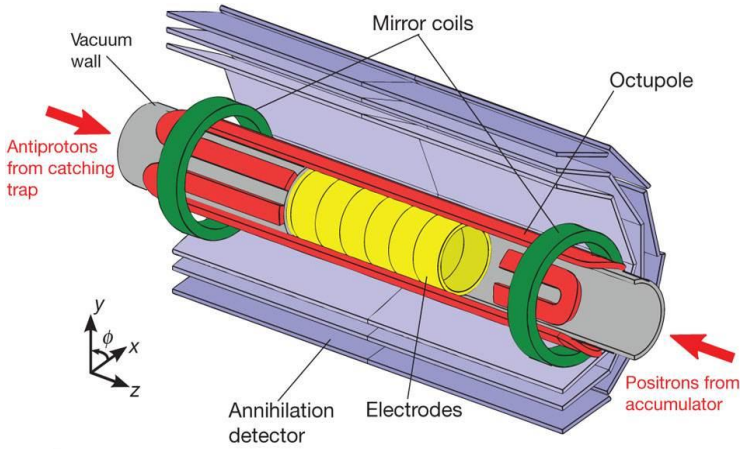
THE PHYSICS COLLOQUIUM

Thursday 15 September 2022, 4:00 p.m.
Nijenborgh 4, **Schröderzaal 5115.0317**

Antihydrogen

Steven Jones

VSI/ALPHA



Why is our universe made of matter and not antimatter? This question has led researchers to search for subtle differences between the two, probing the theories that underpin the Standard Model. Antihydrogen, the antimatter counterpart to hydrogen, is now routinely produced and trapped at CERN, albeit in very small numbers.

Laser spectroscopy of antihydrogen tests CPT symmetry, which tells us that atoms and anti-atoms should have the same energy levels. By dropping antihydrogen, we can test the Weak Equivalence Principle, which states that atoms and anti-atoms should both fall (down) in the Earth's gravitational field at the same rate.

In this talk, I will give an overview of the state-of-the-art techniques used to trap, cool, and measure antihydrogen. I will also discuss a new experiment to produce cold hydrogen using trapped ions at VSI, towards making a direct hydrogen-antihydrogen comparison, (i.e., both species measured at the same time, in the same trap, using the same laser), which would be insensitive to systematic effects.

Join us for coffee starting 3:30 p.m. Refreshments will be served after the lecture.

For more information contact the host: Steven Hoekstra (s.hoekstra@rug.nl)
Website: https://www.rug.nl/research/fse/colloquia/physics-colloquia