



Contribution ID: 69

Type: **Talk**

## Atomic parity violation in ytterbium and dysprosium

*Tuesday 12 June 2018 17:50 (30 minutes)*

In the study of electroweak interactions, atomic parity violation (PV) experiments form a powerful tool, providing valuable information about the Standard Model and low-energy nuclear physics. Ytterbium (Yb) and dysprosium (Dy) are good systems for such studies, due to their strong PV effect (to be confirmed for Dy) and the availability of many stable isotopes. This brings within reach the possibility to perform high-precision measurements of the isotopic dependence of the PV effect, which would serve as a probe of the neutron skin variation among these different isotopes of the ytterbium and dysprosium nuclei. In addition, a determination of the nuclear spin-dependent contributions to the PV effect would be an observation of the nuclear anapole moment, and would yield information about nucleon-nucleon weak meson couplings.

Our programme in Yb parity violation in Mainz has reached in early 2018 its first milestone, namely the observation for the first time, of the isotopic variation of the PV effect, as predicted by the electroweak theory. We will present the result of these measurements, and discuss future prospects for determining nuclear spin-dependent PV effects as well as neutron distributions in ytterbium. We will also discuss the status of the Dy PV experiment, which is currently ongoing in our laboratory.

**Author:** ANTYPASA, Dionysios (Helmholtz-Institut Mainz, Mainz, Germany)

**Presenter:** ANTYPASA, Dionysios (Helmholtz-Institut Mainz, Mainz, Germany)

**Session Classification:** parity violation/weak interaction