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# Boltzmann Lecture 2023

## Precision Tests of Fundamental Interactions and Their Symmetries using Exotic Ions in Penning Traps

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An overview is given on recent mass and  $g$ -factor measurements with extreme precision on single or few cooled ions stored in Penning traps. On the one hand, mass measurements provide crucial information for atomic, nuclear and neutrino physics as well as for testing fundamental interactions and their symmetries and fifth-force search. On the other hand,  $g$ -factor

measurements of the bound

electron in highly charged hydrogen-like ions allow

for the determination of fundamental constants and for constraining quantum electrodynamics. For example, the most stringent test of CPT symmetry in the baryonic sector could be performed by mass comparison of the antiproton with the  $\text{H}^{-}$  ion and the knowledge of the electron atomic mass could be improved by a factor of 13. Our latest results on precision measurements with exotic ions in Penning traps will be presented.

Montag,  
20. November 2023

16:30 – Einlass

17:00 – Boltzmann Lecture 2023

Ausklang bei kleinen  
Erfrischungen

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