Contribution ID: **2** Type: **not specified**

Nuclear polarization in muonic atoms

Monday 27 January 2025 14:15 (45 minutes)

The most precise value of the top-left corner element of the CKM matrix V_{ud} is obtained from superallowed nuclear beta decays. Observed hints to a $2.5-3\sigma$ deficit in top-row CKM unitarity motivated a reanalysis of nuclear corrections. These latter use nuclear charge radii as input, and so do their uncertainties. An extraction of nuclear charge radii from atomic measurements entails a reliable calculation of the nuclear polarization (NP) which depends on the entire spectrum of nuclear excitations. Recently, this contribution has been re-scrutinized for the lightest systems ($\mu-H, D, He$) in a field-theoretical approach based on dispersion relations and input from experimental data on photoabsorption. For heavier atoms, NP is traditionally evaluated using the Rinker-Speth approach from 1970's. I revisit NP in medium-light muonic atoms, propose a simple phenomenological formula to evaluate its effect for the 1S states and compare to existing estimates.

Author: GORSHTEYN, Mikhail (JGU Mainz)

Presenter: GORSHTEYN, Mikhail (JGU Mainz)

Session Classification: Session 2