Contribution ID: **679** Type: **Poster**

Measurement of the nuclear transition energies of Kr-83m using the gaseous krypton source of KATRIN

Thursday 18 July 2024 20:40 (20 minutes)

KATRIN aims to measure the electron neutrino mass
with <0.3 eV/^{2} (90 % C.L.) sensitivity, by measuring the ^{3}H β spectrum near its endpoint $_0$. In the fit yielding the searched for quantity ^{2} also the parameter $_0$ is fitted. Since both parameters are highly correlated in the fit any systematic effect influencing the parameter ^{2} will also manifest in $_0$. After absolute calibration of $_0$ with ^{83m}Kr con-
version electron lines a comparison with measurements of the ^{3}He-^{3}H mass difference is valuable for cross checks of our experimental procedure. This is limited by the knowledge of ^{83m}Kr nuclear
transitions in literature to 0.3 eV. Using a gaseous Kr source at KATRIN a new measurement was performed in
2023. Following the method described in ref. EPJ C 82 (2022) 700
the nuclear transition energies can be determined, which can allow for
a reduction of the $_0$ uncertainty to below 0.1 eV. In this
poster the status is presented.

Alternate track

I read the instructions above

Yes

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