Contribution ID: **64** Type: **Poster (In person)**

Investigation of the properties of ^{124}Sn populated in β^- decay

Wednesday 29 November 2023 18:13 (1 minute)

The investigation of nuclei surrounding doubly-magic isotopes, such as ^{132}Sn, represents a fundamental approach for gaining deeper insights into the nuclear structure. However, the region of neutron-rich tin isotopes remains relatively unexplored, and experimental information is limited.

The only β-decay study of ^{124}In to the excited states in ^{124}Sn have been performed in the 1970s at the Studsvik laboratory [1]. This work was a basis for the 1^+ spin-parity assignment of the ^{124}In ground state. However, since then, the 3^+ assigment was, first, proposed in the β-decay study of ^{124}Cd [2] and later confirmed by laser spectroscopy [4]. In a recent mass measurement study, the excitation energy of the ^{124m}In was reported for the first time [3]. In addition, a reversed order of the two long-lived states, with 8^- being assigned as the ground state, was proposed [3]. These studies encouraged us to revise the existing β-decay scheme of ^{124}In.

The excited states in ^{124}Sn populated via β-decay of ^{124}In were studied at the ISOLDE Decay Station. A pure beam of ^{124}In was delivered by means of laser ionization provided by RILIS. The $\beta\gamma\gamma$ coincidence analysis of the collected data points to identification of new γ-ray transitions. The preliminary results also suggest significant discrepancies between this work and the previous study [1].

[1] B. Fogelberg and P. Carle, Nucl. Phys. A 323, 205 (1979).
[2] J. C. Batchelder *et al.*, Phys. Rev. C 94, 024317 (2016).
[3]D. A. Nesterenko *et al.*, Phys. Rev. C (2023) - accepted.
https://arxiv.org/abs/2306.11505
[4] A. Vernon, *Evolution of the indium proton-hole states up to N = 82 studied with laser spectroscopy*, PhD Thesis (2019).

Authors: KORGUL, Agnieszka Barbara (University of Warsaw (PL)); SZLEZAK, Klara Emilia (University of Warsaw (PL)); SOLAK, Krzysztof Albert (University of Warsaw (PL)); Dr STRYJCZYK, Marek (University of Jyvaskyla (FI), University of Helsinki(FI)); Dr ILLANA SISON, Andres (Universidad Complutense (ES), University of Jyvaskyla (FI), University of Helsinki (FI)); Dr OLAIZOLA, Bruno (CERN, CSIC (ES)); Prof. FRAILE, Luis M (Universidad Complutense (ES)); COLLABORATION, IDS

Presenter: SZLEZAK, Klara Emilia (University of Warsaw (PL))

Session Classification: Poster Session