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Study of neutron-rich ^{133}Sn and ^{134}Sn nuclei via beta-decay

The region of the chart of nuclei close to the doubly-magic nucleus ^{132}Sn has been the object of great interest in both experimental and theoretical investigations for the last several years. This activity is well-motivated by the fact that nuclei with large neutron excess are an ideal playground to verify the reliability of shell model predictions for nuclei far from stability. The crossing of the major neutron ($N=82$) and proton ($Z=50$) shell closures allows for investigation of single-particle states and interaction strengths in this neutron-rich region.

The fast timing and γ spectroscopy were employed together at the ISOLDE Decay Station to study one-neutron particle ^{133}Sn and the two-neutron particle ^{134}Sn nuclei. Sn isotopes were populated in β decay of In isomers, produced from a UCx target unit equipped with a neutron converter. Selective isomer ionisation provided by ISOLDE RILIS for odd-A ^{133}In enabled to extend the knowledge about the structure of ^{133}Sn , which is the main player to deduce single-particle neutron states in this region. Details of the experimental setup and preliminary results will be presented.

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