



Contribution ID: 22

Type: **Submitted**

Many facets of beta-delayed neutron emission from very neutron rich nuclei

Wednesday 15 December 2021 10:45 (12 minutes)

The recent beta delayed neutron emission experiments near ^{132}Sn with VANDLE, and BRIKEN arrays enabled detailed studies of nuclei with very large Q_β and small S_n . This allows exploring the underlying physics more thoroughly. The modeling of beta-delayed neutron emission requires the knowledge of beta-decay strength distribution and neutron emission model. The latter customarily uses the Hauser-Feshbach (HF) model, which implies neutron emission from the compound nucleus. Multi-neutron emission studies near ^{78}Ni appear to be well described well using this approach, although level densities have to be adjusted to fit the experiment. However, in the decay of ^{134}In , we observed a substantial discrepancy between the model prediction and experiment. This leads us to question the universality of the HF treatment and the need to development of more sophisticated models of beta-delayed neutron emission.

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Session Classification: Beta-decay and fundamental interactions