

Proton resonance scattering of a shape-coexistence nucleus ^{118}Sn

Wednesday, 22 August 2018 16:10 (15 minutes)

It is well known that shape coexistence was observed in stable even-even Sn($Z=50$) nuclei, and the even-odd neighboring nucleus may have a hint of the structure. So far, some single-particle like states in Sn were observed by measuring (d,p) reaction on Sn. Though the isobaric analog resonances corresponding to the low-lying states in Sn were already measured for the spectroscopic information on Sn, there are some missing resonances expected from (d,p) reaction. It is necessary to measure the excitation function of proton-elastic resonance scattering with the wide energy range to understand the structure of ^{119}Sn . The proton resonance elastic scattering on Sn yields the spectroscopic information of the single particle state coupled to the ground-state of Sn.

The experiment was carried out at the tandem accelerator facility in Kyushu University. An enriched ^{118}Sn target was irradiated by a proton beam while varying the beam energy from 7 to 10 MeV. The reaction channel was identified by the outgoing angle and energy of scattered protons measured by single-sided silicon strip detectors placed at 140-160°.

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Session Classification: YSS