Contribution ID: **20** Type: **not specified**

Secondary knockout reactions and lifetime measurement with the plunger technique

Thursday, 11 April 2019 14:30 (15 minutes)

Secondary knockout reactions and lifetime measurement with the plunger technique

Recent work [Delafosse] has pointed out that the physics around the N=50 shell closure close to ^{78}Ni may be driven by the effects of ρ-meson exchange potential. This potential causes a reduction of the N=50 gap going towards Z=32, inducing a sudden increase of across-shell quadrupole coherence in ^{84}Ge. Indeed, collectivity in N=52 isotones has been shown to point out a shape change from ^{86}Se to ^{84}Ge, from soft-triaxial to frankly prolate [Delafosse]. The large error bars on lifetime measurements available in ^{84}Ge, and the absence of measurements in ^{82}Zn, prevent to draw firm conclusions, in particular concerning the occurrence of intruder configurations already in the ground state of ^{84}Ge, anticipating the occurrence [Delafosse].

Experimental considerations:
We consider the use of a $5 10^4$ *pps* ^{85}*As beam, and a* ^{9}*Be target of 1 g/cm*^{2}*. We consider a gamma-ray detection efficiency of 10%. Using a cross section of 1 mbarn for the states of interest in* ^{84}*Ge, one would have 120 counts per hours. Considering the need measuring five distances, with about 100 counts per peak, one would need about 12 hours of measurement. For the same measurement in* ^{82}*Zn, the* ^{83}*Ga secondary beam is only* $2 10^3$ pps. As a result, one would need 12 days of measurement. Restricting to only three distances, one could measure the lifetime of the 2^+, 4^+ states in 5-6 days.

Bibliography

[Delafosse] C. Delafosse et al., Phys. Rev. Lett. 121, 192502 (2018)

Primary authors: GOTTARDO, Andrea (LNL - INFN); VALIENTE DOBON, Jose Javier (LNL-INFN)

Presenter: GOTTARDO, Andrea (LNL - INFN)

Session Classification: Proposals