

High Resolution Measurement of $^{120}\text{Sn}(\vec{p},\alpha)^{117}\text{In}$ Reaction at 23 MeV

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In order to investigate the existence of homologous states in the mass region $A\sim 120$ we have measured the $^{120}\text{Sn}(\vec{p},\alpha)^{117}\text{In}$ reaction at 23 MeV proton incident energy.

The angular distributions of cross sections $\sigma(\theta)$ and analyzing powers $A_y(\theta)$ of the triton pickup reaction have been measured, from 10° up to 55° in two different magnetic field settings, in a high resolution experiment at the Munich MP Tandem accelerator, using the Stern-Gerlach atomic beam source of negative polarized hydrogen ions [1]. A ^{120}Sn target (99.6% enriched, $41\mu\text{g}/\text{cm}^2$ thick) evaporated on a $9\mu\text{g}/\text{cm}^2$ carbon backing has been used. The outgoing α 's have been analyzed with the Q3D magnetic spectrograph and detected in the light ion focal plane

detector [2]. The intensity of beam current was up to $0.9\mu\text{A}$ and the beam polarization 53%.

A DWBA analysis of $\sigma(\theta)$ and $A_y(\theta)$ has been carried out assuming a semimicroscopic triton pickup mechanism. The calculations in finite range approximation have been performed with the code TWOFNR [3] using a Gaussian proton-triton interaction potential.

In Fig. 1 the comparison between experimental and calculated $\sigma(\theta)$ and $A_y(\theta)$ for the population of several ^{117}In levels is presented.

References

- [1] R. Hertenberger *et al.*, Nucl.Instr. and Meth. **A536** (2005) 266
- [2] H.-F. Wirth *et al.*, Annual report 2000, p. 71
- [3] M. Igarashi, computer code TWOFNR (1977) unpublished.

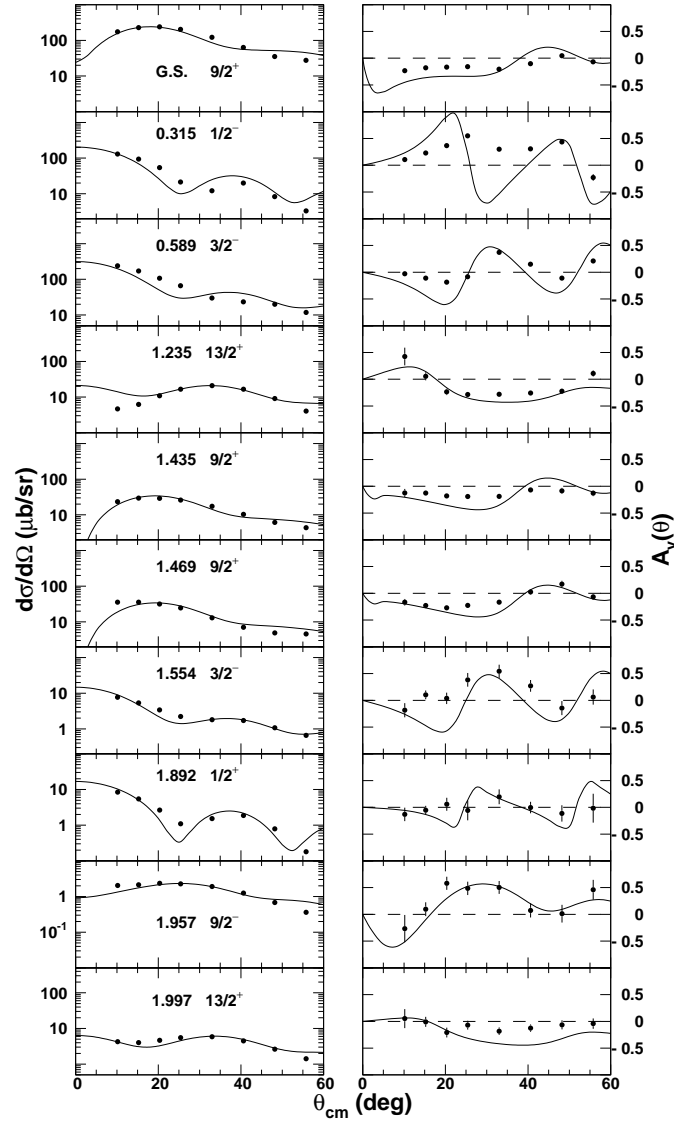


Fig. 1: Comparison between experimental and DWBA results