Spectroscopy of ^{120}Sn via the ^{122}Sn(p,t)^{120}Sn Reaction. ◇

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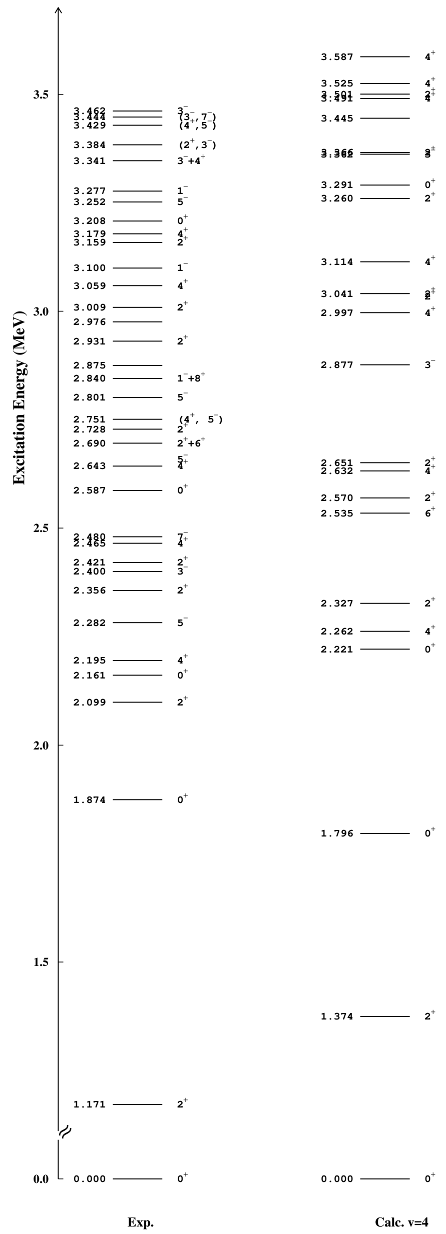
A shell-model study of ^{120}Sn has been performed using a realistic effective interaction derived from the Paris nucleon-nucleon potential. The calculations for positive parity states have been carried out within the framework of the seniority scheme including states up to seniority 4. The results of this study have been compared with those obtained from the ^{122}Sn(p,t)^{120}Sn transfer reaction, and are presented in the figure. Calculations for negative parity states are in progress.

The reaction ^{122}Sn(p,t)^{120}Sn has been studied [1] at 26 MeV incident energy, using the Munich MP Tandem accelerator, the Q3D spectrometer and the light ion focal plane detector with periodic read out. Angular distributions have been measured from 5^o up to 75^o in steps of 5^o, using a 0.134 mg/cm^2 ^{122}Sn target, enriched to 96%.

It turns out that a very satisfactory agreement between theory and experiment is obtained. In particular, most of the new levels identified in the (p,t) study are well reproduced by the theory. The theoretical predictions suggest how to resolve some ambiguities existing in the experimental level scheme.

The attribution of spin and parity to the levels of experimental energy spectra is performed by means of an analysis in the framework of DWBA, using a double-folded triton potential.

The potential parameters are fitted simultaneously to experimental elastic scattering data of ^{122}Sn(p,p) and ^{120}Sn(t,t), and to ^{122}Sn(p,t)^{120}Sn transfer reaction data, using the TROMF code [2].



T A B L E														
	V_r	r_r	a_r	λ	W_v	r_w	a_w	W_d	r_d	a_d	V_{so}	r_{so}	a_{so}	r_c
p	55.7	1.14	0.66					36.7	1.05	0.91	18.5	1.54	0.78	1.25
t				1.33	8.21	1.81	0.80				7.32	1.44	0.28	1.25
B.S.		1.34	0.57											

References

[1] U. Atzrott, F. Nuoffer, G. Staudt, G. Graw, R. Hertenberger, D. Hofer, B. Valnion, E. Zanotti-Müller, Gh. Cata-Danil, P. Guazzoni, M. Jaskola, L. Zetta, Verhandl. DPG (VI) 30 (1995) 716

[2] M. Walz, Computer code TROMF, University of Tübingen, unpublished

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