

SEKTIE D

D1 SHELL-MODEL STUDY OF A = 56 NUCLEI

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In recent calculations on Ni, Cu¹⁾ and Zn²⁾ isotopes the $f_{7/2}$ shell has been treated as double-closed.

To investigate the nature of the breaking of the $f_{7/2}$ -shell closure and its effect on neighbouring nuclei, a systematic study of the Fe, Co and Ni isotopes around $A = 56$ has been started.

The configuration space involves the $f_{5/2}p_{3/2}p_{1/2}$ space and selected $f_{7/2}$ states with up to four holes.

Previous studies have been restricted to an even number of particles in each orbit³⁾ or to less $f_{7/2}$ -hole states⁴⁾.

Preliminary results with the Surface Delta Interaction confirm the importance of $4p-4h$ states for the description of the energy spectra of ^{56}Ni and ^{56}Fe . Some results for neighbouring nuclei will be reported as well.

- 1) J.E. Koops and P.W.M. Glaudemans, to be published
- 2) J.F.A. van Hienen, W. Chung and B.H. Wildenthal, to be published
- 3) G. Oberlechner and J. Richert, Nucl. Phys. A191 (1972) 577
- 4) S.S.M. Wong and W.G. Davies, Phys. Lett. 28B (1968) 77

D2 Coupling of quasiparticles to phonons.

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For several years the Alaga-model has been used for nuclei near a closed shell. In this model a three-fermion-cluster is coupled to vibrational phonons. For nuclei with open shells we have coupled three quasiparticles to phonons. Particlenumber-projection is performed. Some results of calculations on Xe-isotopes will be discussed.