INVESTIGATION OF THE SOME LOW-LYING STATES IN ^{108}Ag FOLLOWING THE ^{107}Ag (n,gamma) REACTION

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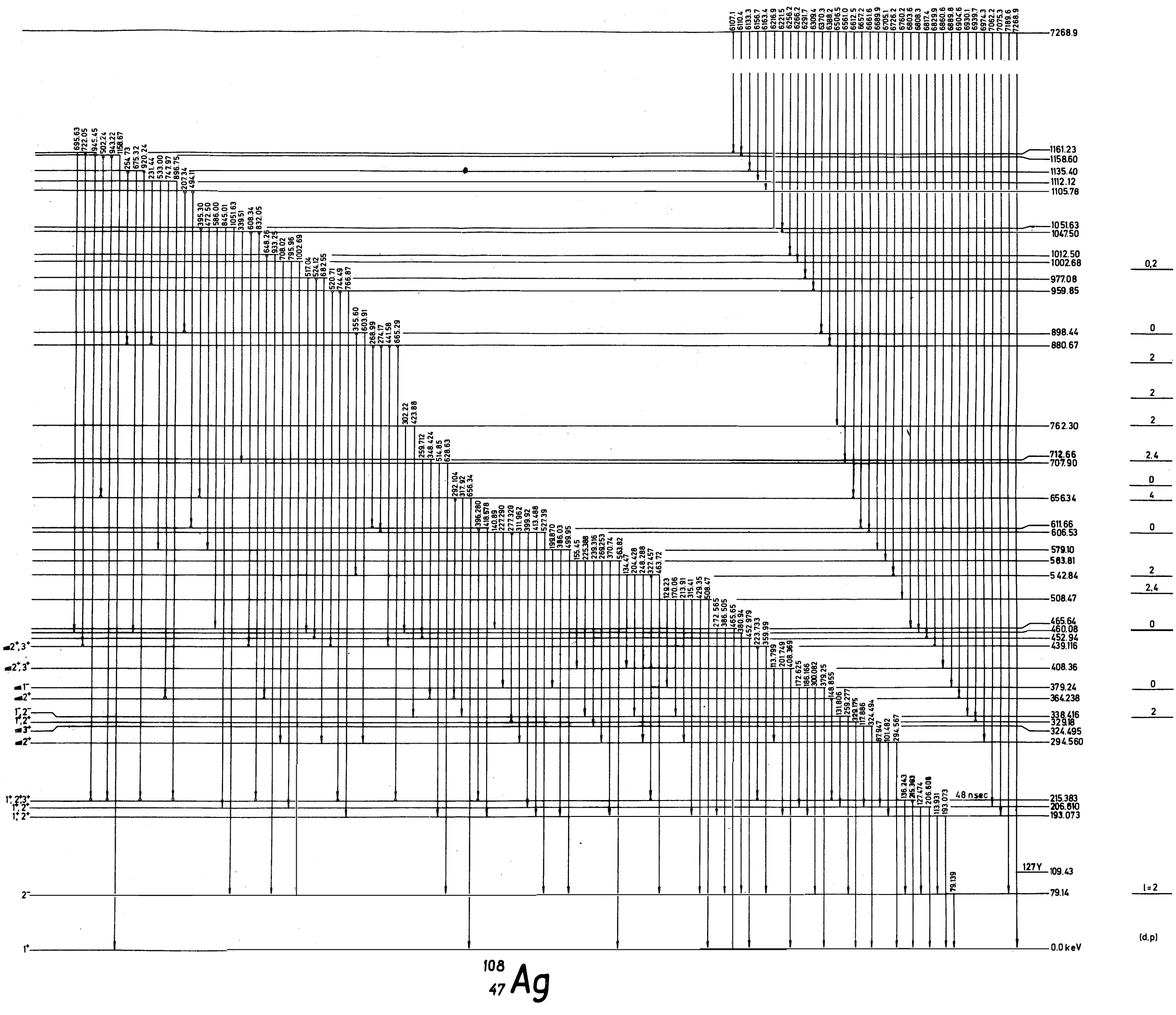
It is of considerable interest to establish energies and spins of low-lying states of ^{108}Ag and ^{110}Ag since the spectra of the neighbouring even-even Pd and Cd and odd-even Ag isotopes show vibration-like characteristics. The ground state quasirotational bands are rather regular in Pd and exibit irregularities in Cd isotopes. The odd-even Ag isotopes show the characteristic excitational pattern for the core - cluster coupling description with the characteristic decoupled bands. The three - proton holes in ^{108}Ag and ^{110}Ag are distributed in $g_{9/2}$, $p_{1/2}$, $p_{3/2}$ and $f_{5/2}$ shell model states. Eleven and thirteen neutrons outside the closed shell at 50 neutrons, are distributed in $g_{7/2}$, $d_{5/2}$, $h_{11/2}$, $s_{1/2}$, $d_{3/2}$ shell - model states, giving rise to the 5/2 and 1/2 ground state in $^{109}_{48}$Cd and $^{111}_{48}$Cd. This already indicates some difference to be expected in the spectra od ^{108}Ag and ^{110}Ag. However, till now there is no theoretical calculation for ^{108}Ag and ^{110}Ag.

The level schemes of ^{108}Ag and ^{110}Ag are expected to be very complicated. The existing decay scheme of the low-lying levels of ^{108}Ag, given in ref. (1), is based on the high-resolution low-energy (n,gamma) data from the diffractometer (Risö) and the high energy


7268.9
1161.23
1158.60
1135.40
1112.12
1105.78
1051.63
1047.50
1012.50
1002.68
977.08
959.85
898.44
880.67
762.30
712.66
707.90
656.34
611.66
606.53
579.10
563.81
542.84
508.47
465.64
460.08
452.94
439.116
408.36
379.24
364.238
338.416
329.18
324.495
294.560
215.383
206.610
193.073
109.43
79.14
0.0 keV
48 nsec
127Y
2⁺,3⁺
2⁺,3⁺
1⁻
2⁺
1⁻,2⁻
1⁺,2⁺
3⁺
2⁺
1⁺,2⁺,3⁺
1⁻,2⁺
1⁺,2⁺
2⁻
1⁺
0,2
0
2
2
2
2,4
0
4
0
2
2,4
0
0
2
l=2
(d,p)

$^{108}_{47}Ag$

(n,gamma) data[2], the (d,p) data[3] and the internal conversion coefficients measurements[4].

In this work we present additional information on the level scheme of ^{108}Ag, obtained by using the time-differential coincidence measurements with Ge(Li) and NaI(Tl) detectors, in order to investigate the population of the 215.38 KeV ($T_{1/2}$ = 48 ns) isomeric level in ^{108}Ag, following the thermal neutron capture in ^{107}Ag. In such experiments, from the intensity of a line in coincidence and single spectra respectively, a new parameter can be derived, indicating all the feeding modes of the isomeric state (for details see ref. (5)).

The lower part of the proposed level scheme of ^{108}Ag is presented in fig. 1. The level scheme is derived on the basis of our coincidence data and the precisely determined gamma-ray energies, given in ref. (1).

References

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