^{192}Os(^{82}Se,Xγ) 2004Zh27

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	T. D. Johnson and W. D. Kulp(a)	NDS 129, 1 (2015)	27-Jul-2015

192Os(82Se,xγ) with beam energy E=460 MeV. Measured Eγ, Iγ, $\gamma\gamma$, $\gamma\gamma(\theta)$ with the 4π spectrometer GASP consisting of 40 Compton-suppressed, large-volume Ge detectors and of an inner BGO ball acting as a multiplicity filter and total-energy spectrometer. Deep inelastic reaction. The level scheme of 2004Zh27 is also given in 2005Lu07.

Shell model calculations suggest that particle-hole excitations across the N=50 neutron core become important after levels above spin 17/2. However, it is argued that some remaining discrepency between experimental results and shell model calculations may be due to not having accounted for collectivity. See 2004Zh27 for more details.

^{87}Rb Levels

E(level)†	J$^\pi$‡	T$_{1/2}$	Comments
0.0#	3/2$^-$		
402.60# *10*	5/2$^-$	0.08 ns *5*	
1577.91# *15*	9/2$^+$	6 ns *1*	T$_{1/2}$: From Adopted Levels.
3001.0# *4*	(11/2)$^+$		J$^\pi$: based on systematics of surrounding levels in ^{87}Rb. (11/2)$^+$ is also listed in table I with final level for 408.0γ. π from Adopted Levels.
3409.03# *18*	(13/2$^+$)		J$^\pi$: Inferred from R(ADO) of 1831γ assuming (Q) to be E2. It is suggested that the somewhat smaller than expected value may be due to a loss of alignment due to higher lying isomeric states.
3644.03# *20*	(15/2$^+$)		
4150.63# *23*	(17/2$^+$)		
4855.0# *4*	(19/2$^+$)		
5026.7# *4*	(21/2$^+$)		
5481.2# *5*	(23/2$^+$)		
6565.9# *6*			
6821.7# *6*			

† From least-squares fit to Eγ′s (by evaluator).
‡ Deduced by 2004Zh27 from values of R(ADO), wherever possible. Differences from Adopted Levels noted.
# Band(A): Yrast sequence.

γ(^{87}Rb)

$E_γ$ †#	$I_γ$ @	E_i(level)	$J^π_i$	E_f	$J^π_f$	Mult.‡	δ	α&	Comments
171.7 *1*	33 *7*	5026.7	(21/2$^+$)	4855.0	(19/2$^+$)	(D+Q)			R(ADO)=0.60 *7*.
235.0 *1*	54 *11*	3644.03	(15/2$^+$)	3409.03	(13/2$^+$)	(D+Q)			R(ADO)=0.56 *6*.
255.8 *5*	7.0 *14*	6821.7		6565.9					
402.6 *1*	100 *20*	402.60	5/2$^-$	0.0	3/2$^-$	M1+E2	−0.24 *12*	0.00411 *18*	α(K)=0.00364 *16*; α(L)=0.000398 *19*; α(M)=6.6×10^{-5} *3* α(N)=7.4×10^{-6} *4*; α(O)=3.20×10^{-7} *13* R(ADO)=1.05 *6*. Mult.: From Adopted Levels and consistent with R(ADO). δ: From Adopted Levels.
408.0 *5*	7.0 *14*	3409.03	(13/2$^+$)	3001.0	(11/2)$^+$				
454.5 *3*	19 *4*	5481.2	(23/2$^+$)	5026.7	(21/2$^+$)	(D+Q)			R(ADO)=1.0 *3*.
506.6 *1*	50 *10*	4150.63	(17/2$^+$)	3644.03	(15/2$^+$)	D(+Q)			R(ADO)=0.79 *10*.
704.4 *3*	26 *5*	4855.0	(19/2$^+$)	4150.63	(17/2$^+$)	(D+Q)			R(ADO)=1.29 *20*.
875.9 *5*	7.0 *14*	5026.7	(21/2$^+$)	4150.63	(17/2$^+$)				
1084.7 *5*	7.0 *14*	6565.9		5481.2	(23/2$^+$)				
1175.3 *1*	74 *15*	1577.91	9/2$^+$	402.60	5/2$^-$	M2		8.04×10^{-4}	α(K)=0.000712 *10*; α(L)=7.71×10^{-5} *11*; α(M)=1.272×10^{-5} *18* α(N)=1.447×10^{-6} *21*; α(O)=6.31×10^{-8} *9*; α(IPF)=6.66×10^{-7} *10* R(ADO)=1.02 *7*. Mult.: From Adopted Levels and consistent with the Q multipolarity determined from R(ADO).
1211.0 *5*	7.0 *14*	4855.0	(19/2$^+$)	3644.03	(15/2$^+$)				
1340.5 *5*	7.0 *14*	6821.7		5481.2	(23/2$^+$)				
1423.0 *5*	7.0 *14*	3001.0	(11/2)$^+$	1577.91	9/2$^+$				
1831.1 *1*	63 *13*	3409.03	(13/2$^+$)	1577.91	9/2$^+$	(Q)			R(ADO)=1.13 *7*.

† Cross γ-ray coincidences (the γ rays coming from the decay of the “target-like” fragments in coincidence with those coming from the “beam-like” reaction products) were used to distinguish between the different reaction partners, due to the nature of the binary reaction mechanism.

‡ For the angular distribution of oriented nuclei, R(ADO)=Iγ(34°)/Iγ(90°). Stretched quadrupole (ΔJ=2) transitions have R(ADO) values ≈1.4, whereas R(ADO)≈0.8 for stretched dipole; stretched quadrupole transitions cannot be distinguished from ΔJ=0 dipole transitions or certain M1+E2 admixtures of ΔJ=1 transitions (see 2004Zh27).

\# 2004Zh27 state that uncertainty ranges from 0.1-0.5 keV; Based on this statement, uncertainties are assigned with the following criterion: ΔEγ=0.1 keV for Iγ>30; ΔEγ=0.3 keV for 10≤RI≤30; ΔEγ=0.5 keV for Iγ<10.

@ 2004Zh27 quote that the uncertainties in relative intensities are within 20%.

& Additional information 1.

From ENSDF

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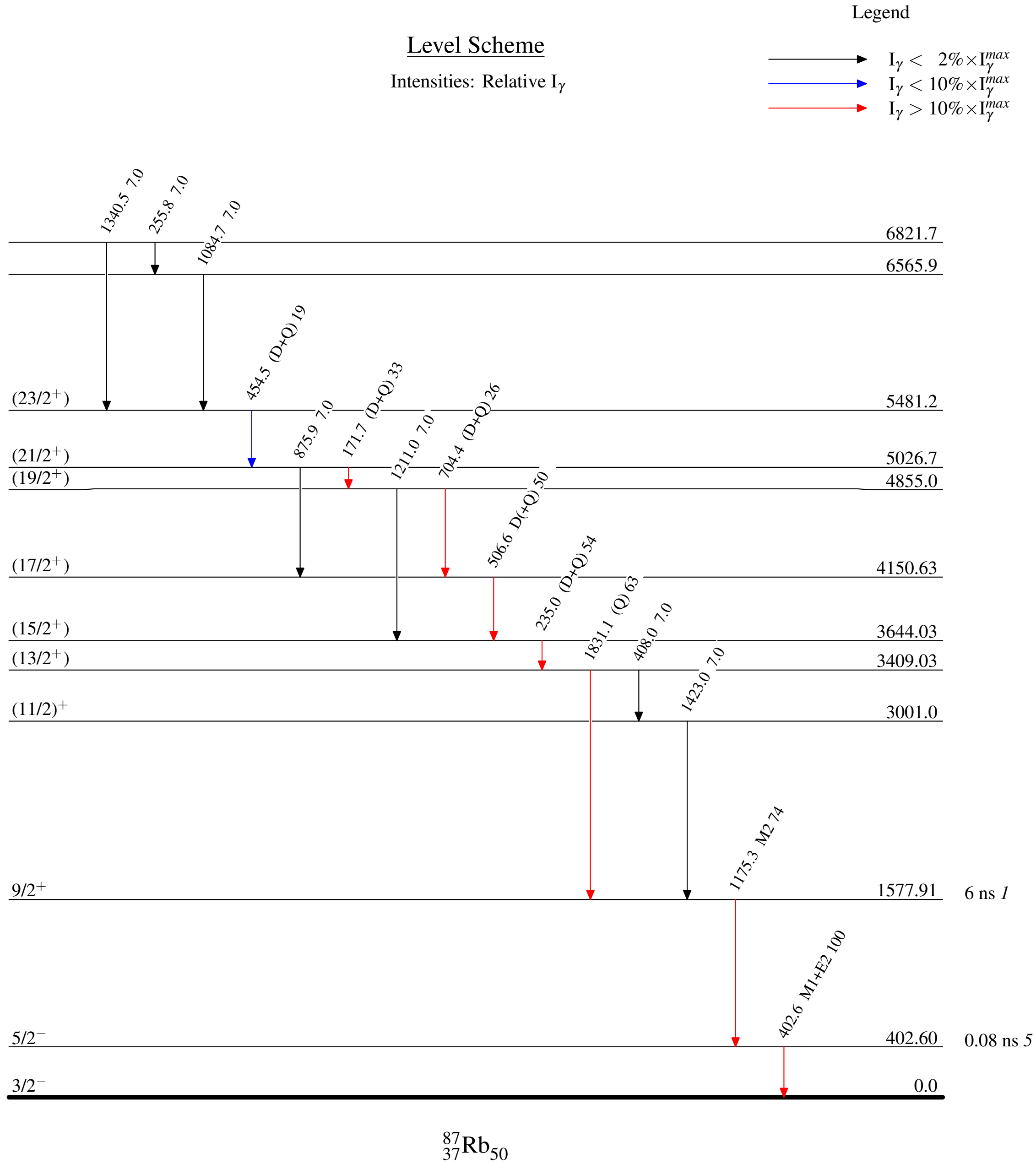
Level Scheme

Intensities: Relative I_γ



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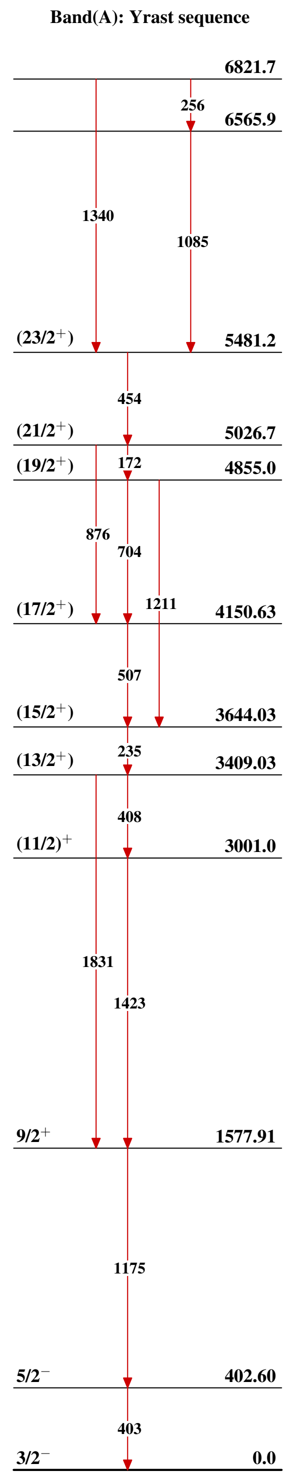

$^{87}_{37}Rb_{50}$