^{54}Fe(^{28}Si,3pnγ) E=110 MeV 1997Mu02

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Ameenah R. Farhan, Balraj Singh	NDS 110, 1917 (2009)	30-Jun-2009

1997Mu02: E= 110 MeV. Measured γ, $\gamma\gamma$, (particle)γ coin, $\gamma\gamma(\theta)$(DCO using six Compton-suppressed Ge detectors.
Other: 1994Gr01 quote (from reference 19 in their paper: J.H. McNeill et al., Manchester Nuclear Physics Report Aug 1987-Dec 1988, p27 (1989)) one band with γ cascade: 1857-1664-1467-1274-1082-894-707-504 from (21^-) to (5^-).

^{78}Rb Levels

E(level)[†]	J$^\pi$[‡]	E(level)[†]	J$^\pi$[‡]	E(level)[†]	J$^\pi$[‡]	E(level)[†]	J$^\pi$[‡]
103+x[@a]	$4^{(-)}$	1207+x[d]	$9^{(-)}$&	3029+x[d]	$13^{(-)}$&	6190+x[b]	(17^-)
256+x[b]	$5^{(-)}$	1467+x[b]	(9^-)	3444+x[b]	(13^-)	7179+x[d]	(19^-)&
411+x[c]	$6^{(-)}$&	1614+x[c]	$10^{(-)}$&	3884+x[c]	(14^-)&	7854+x[#b]	(19)[#]
480+x[a]	$6^{(-)}$	1932+x[a]	(10^-)	4142+x[a]	(14^-)	8919+x[d]	(21^-)&
655+x[d]	$7^{(-)}$&	2011+x[d]	$11^{(-)}$&	4241+x[d]	(15^-)&	9711+x[#b]	(21)[#]
759+x[b]	$7^{(-)}$	2362+x[b]	(11^-)	4719+x[b]	(15^-)		
841+x[c]	$8^{(-)}$&	2639+x[c]	(12^-)&	5313+x[c]	(16^-)&		
1106+x[a]	$8^{(-)}$	2947+x[a]	(12^-)	5628+x[d]	(17^-)&		

[†] Comparison with level energies in 'Adopted Levels' gives x=8 for band members built on $4^{(-)}$ level (bands #3 and #4 in figure 1 of 1997Mu02) and x=12 for band members built on $6^{(-)}$ level (bands #1 and #2 in figure 1 of 1997Mu02). This odd feature of level scheme in comparison to 'Adopted Levels' is due to different ordering of a γ cascade and some γ rays being doublets. The 153γ is a doublet with the other component deexciting the 411+x level and feeding a level at 256+x which further deexcites through the 155γ feeding a level at 107+x. The 367-185-244-153-155 γ cascade feeds a 107+x level, instead of 103+x level.
[‡] As proposed by 1997Mu02 based on their $\gamma\gamma(\theta)$(DCO) data for selected transitions. The assignments are mostly the same in 'Adopted Levels', except that most assignments are given in parentheses there due to lack of strong supporting arguments. As indicated, parties of two bands are also opposite.
[#] Quoted by 1994Gr01 from a secondary reference given above.
[@] Corresponds to 5.74-min isomer.
[&] Negative parity is assigned by 1997Mu02 whereas positive parity is assigned in 'Adopted Levels' based on more detailed data from 1996Ka24.
[a] Band(A): Band based on $4^{(-)}$, α=0. Comparison with level energies in 'Adopted Levels' gives x=8.
[b] Band(a): Band based on $4^{(-)}$, α=1. Comparison with level energies in 'Adopted Levels' gives x=8.
[c] Band(B): Band based on $6^{(-)}$, α=0. Comparison with level energies in 'Adopted Levels' gives x=12. Positive parity to this band is assigned in 'Adopted Levels'.
[d] Band(b): Band based on $6^{(-)}$, α=1. Comparison with level energies in 'Adopted Levels' gives x=12. Positive parity to this band is assigned in 'Adopted Levels'.

γ(^{78}Rb)

E$_\gamma$	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	E$_\gamma$	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$
153	256+x	$5^{(-)}$	103+x	$4^{(-)}$	347[‡]	1106+x	$8^{(-)}$	759+x	$7^{(-)}$
155[‡]	411+x	$6^{(-)}$	256+x	$5^{(-)}$	362[‡]	1467+x	(9^-)	1106+x	$8^{(-)}$
185[‡]	841+x	$8^{(-)}$	655+x	$7^{(-)}$	367[‡]	1207+x	$9^{(-)}$	841+x	$8^{(-)}$
225[‡]	480+x	$6^{(-)}$	256+x	$5^{(-)}$	377	480+x	$6^{(-)}$	103+x	$4^{(-)}$
244[‡]	655+x	$7^{(-)}$	411+x	$6^{(-)}$	391	3029+x	$13^{(-)}$	2639+x	(12^-)
278[‡]	759+x	$7^{(-)}$	480+x	$6^{(-)}$	398[‡]	2011+x	$11^{(-)}$	1614+x	$10^{(-)}$
308	411+x	$6^{(-)}$	103+x	$4^{(-)}$	406	1614+x	$10^{(-)}$	1207+x	$9^{(-)}$

Continued on next page (footnotes at end of table)

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$\gamma(^{78}Rb)$ (continued)

E_γ	E_i(level)	J_i^π	E_f	J_f^π	E_γ	E_i(level)	J_i^π	E_f	J_f^π
430	841+x	$8^{(-)}$	411+x	$6^{(-)}$	1082	3444+x	(13^-)	2362+x	(11^-)
465‡	1932+x	(10^-)	1467+x	(9^-)	1195	4142+x	(14^-)	2947+x	(12^-)
503	759+x	$7^{(-)}$	256+x	$5^{(-)}$	1212	4241+x	(15^-)	3029+x	$13^{(-)}$
552	1207+x	$9^{(-)}$	655+x	$7^{(-)}$	1245	3884+x	(14^-)	2639+x	(12^-)
626	1106+x	$8^{(-)}$	480+x	$6^{(-)}$	1275	4719+x	(15^-)	3444+x	(13^-)
707	1467+x	(9^-)	759+x	$7^{(-)}$	1385	5628+x	(17^-)	4241+x	(15^-)
773	1614+x	$10^{(-)}$	841+x	$8^{(-)}$	1430	5313+x	(16^-)	3884+x	(14^-)
804	2011+x	$11^{(-)}$	1207+x	$9^{(-)}$	1471#	6190+x	(17^-)	4719+x	(15^-)
826	1932+x	(10^-)	1106+x	$8^{(-)}$	1553	7179+x	(19^-)	5628+x	(17^-)
895	2362+x	(11^-)	1467+x	(9^-)	1664†	7854+x	(19)	6190+x	(17^-)
1015	2947+x	(12^-)	1932+x	(10^-)	1739	8919+x	(21^-)	7179+x	(19^-)
1018	3029+x	$13^{(-)}$	2011+x	$11^{(-)}$	1857†	9711+x	(21)	7854+x	(19)
1025	2639+x	(12^-)	1614+x	$10^{(-)}$					

† Quoted by 1994Gr01 from a secondary reference listed above.
‡ 1997Mu02 state that their DCO values is consistent with M1/E2 multipolarity implying that the transition is ΔJ=1. Numerical values of DCO′s are not listed by 1997Mu02.
# 1467 quoted by 1994Gr01.

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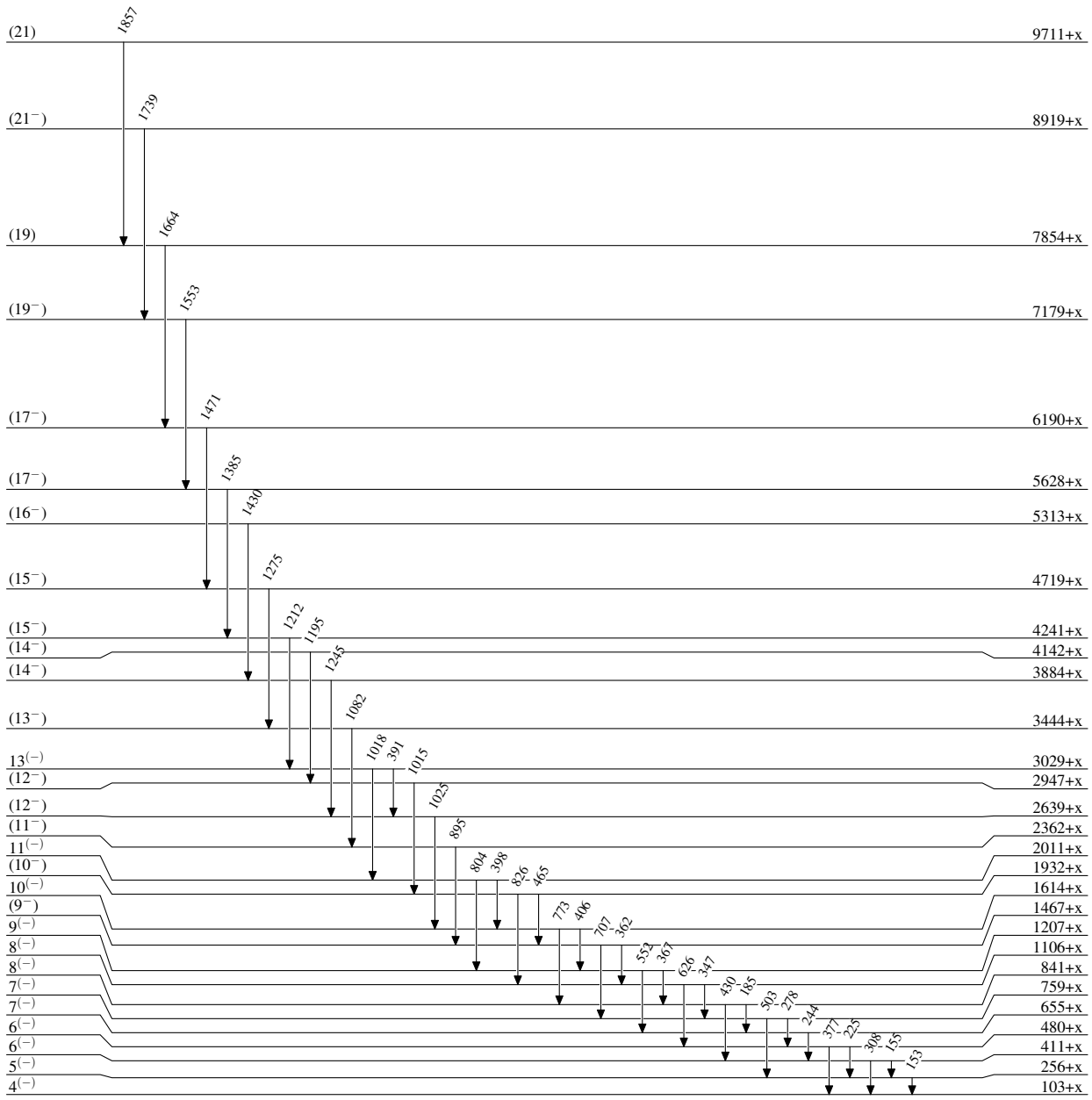
Level Scheme



$^{78}_{37}Rb_{41}$

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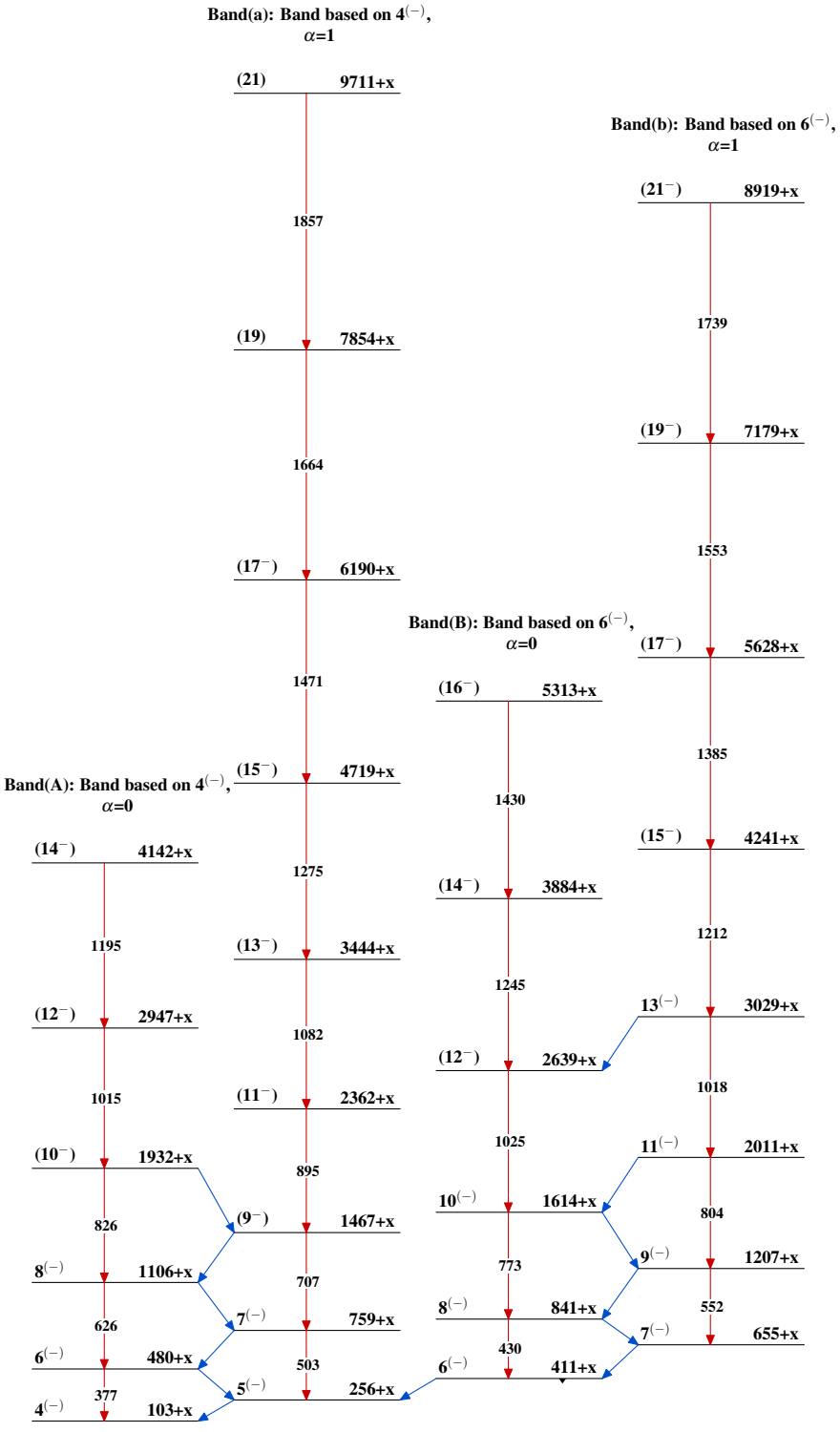

$^{78}_{37}Rb_{41}$