^{54}Fe(^{58}Ni,2pγ) 1994Fa12

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	G. Gürdal and F. G. Kondev	NDS 113, 1315 (2012)	1-Aug-2011

Beam: ^{58}Ni=270 MeV. Target: ^{54}Fe, 10 mg/cm^2 thick, enriched to 99.8%. The ^{58}Ni beam was provided by the accelerator facilities of the Tandem Accelerator Laboratory of the Niels Bohr Institute in Denmark. γ-rays were detected by the NORDBALL multi-detector array, consisting of 15 BGO shielded Ge detectors, one of which was a LEPS detector. In order to select different reaction channels a 4π charged-particle detector system comprising 21 ΔE-type Si detectors, a 1π neutron-detector assembly consisting of 11 liquid scintillator detectors in the forward direction, and a 2π γ-ray calorimeter composed of 30 BaF_2 crystals in the forward hemisphere were used.

Measured: Eγ, Iγ, $\gamma\gamma$, $\gamma\gamma(\theta)$. Deduced: ^{110}Te levels, J^π.

^{110}Te Levels

E(level)[†]	J$^\pi$[‡]	E(level)[†]	J$^\pi$[‡]	E(level)[†]	J$^\pi$[‡]	E(level)[†]	J$^\pi$[‡]
0.0[#]	0^+	2575.3 *11*	(6,7)	3622.2 *11*		6682.3[@] *11*	$17^{(-)}$
657.70[#] *10*	2^+	2898.9 *11*		3736.6[@] *11*	$9^{(-)}$	6856.3 *11*	(17^-)
1402.4[#] *10*	4^+	3220.6 *11*	(7,8)	4175.6 *12*		7449.6[@] *11*	(19^-)
1926.9 *11*	(5)	3223.5 *11*	(7,8,9)	4354.8[@] *11*	$11^{(-)}$	8420.8[@] *12*	(21^-)
2226.8[#] *10*	6^+	3289.0[#] *11*	8^+	5082.9[@] *11*	$13^{(-)}$		
2520.3 *11*	(6^+)	3347.1 *11*	(8^+)	5869.2[@] *11*	$15^{(-)}$		

[†] From least-squares fit to Eγ's.
[‡] From the deduced γ-ray transition multipolarities using $\gamma\gamma(\theta)$ and the observed band structures in 1994Fa12.
[#] Band(A): g.s. band.
[@] Band(B): band built on J$^\pi$=$9^{(-)}$ 3736.6 keV level.

γ(^{110}Te)

E$_\gamma$[†]	I$_\gamma$[‡]	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	Mult.[#]	Comments
293.4 *3*	12 *2*	2520.3	(6^+)	2226.8	6^+		
389.4 *3*	21 *2*	3736.6	$9^{(-)}$	3347.1	(8^+)	D	Mult.: R=0.96 *20*.
447.6 *2*	46 *2*	3736.6	$9^{(-)}$	3289.0	8^+	D	Mult.: R=0.78 *10*.
513.1 *5*	8 *2*	3736.6	$9^{(-)}$	3223.5	(7,8,9)		
524.5 *3*	11 *2*	1926.9	(5)	1402.4	4^+		
553.4 *5*	9 *2*	4175.6		3622.2			
593.4 *5*	7 *3*	7449.6	(19^-)	6856.3	(17^-)		
618.2 *1*	65 *4*	4354.8	$11^{(-)}$	3736.6	$9^{(-)}$	E2	Mult.: R=1.51 *17*.
648.2 *3*	16 *2*	3223.5	(7,8,9)	2575.3	(6,7)		
648.4 *3*	16 *2*	2575.3	(6,7)	1926.9	(5)		
657.7 *1*	100	657.70	2^+	0.0	0^+	E2	Mult.: R=1.50 *21*.
672.1 *3*	24 *4*	2898.9		2226.8	6^+		
723.3 *3*	15 *2*	3622.2		2898.9			
728.1 *1*	69 *4*	5082.9	$13^{(-)}$	4354.8	$11^{(-)}$	E2	Mult.: R=1.70 *21*.
744.7 *1*		1402.4	4^+	657.70	2^+	E2	Mult.: R=1.54 *12*.
767.3 *3*	14 *3*	7449.6	(19^-)	6682.3	$17^{(-)}$		
786.3 *1*	58 *4*	5869.2	$15^{(-)}$	5082.9	$13^{(-)}$	E2	Mult.: R=1.57 *22*.
813.1 *3*	16 *3*	6682.3	$17^{(-)}$	5869.2	$15^{(-)}$		
824.4 *1*	65 *4*	2226.8	6^+	1402.4	4^+	E2	Mult.: R=1.35 *22*.
826.7 *3*	20 *3*	3347.1	(8^+)	2520.3	(6^+)		
971.2 *3*	11 *3*	8420.8	(21^-)	7449.6	(19^-)		
987.1 *3*	13 *2*	6856.3	(17^-)	5869.2	$15^{(-)}$		

Continued on next page (footnotes at end of table)

^{54}Fe(^{58}Ni,2pγ) 1994Fa12 (continued)

γ(^{110}Te) (continued)

E_γ [†]	I_γ [‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [#]	Comments
993.8 *2*	28 *3*	3220.6	(7,8)	2226.8	6^+	D,Q	Mult.: R=1.12 *24*.
1062.2 *2*	44 *2*	3289.0	8^+	2226.8	6^+	E2	Mult.: R=1.31 *23*.
1117.9 *3*	13 *2*	2520.3	(6^+)	1402.4	4^+	(Q)	Mult.: R=1.24 *56*.

† From 1994Fa12, but $\Delta E\gamma$ were estimated by the evaluators.
‡ Relative intensity deduced from a spectrum gated on 744.7γ from the sum of the 1p and 2p gated matrices.
# From the deduced correlation ratio R=Iγ(≈143°)/Iγ(≈79°,≈101°) using $\gamma\gamma(\theta)$ in 1994Fa12 and the apparent band structure.

$^{54}Fe(^{58}Ni,2p\gamma)$ 1994Fa12

Level Scheme

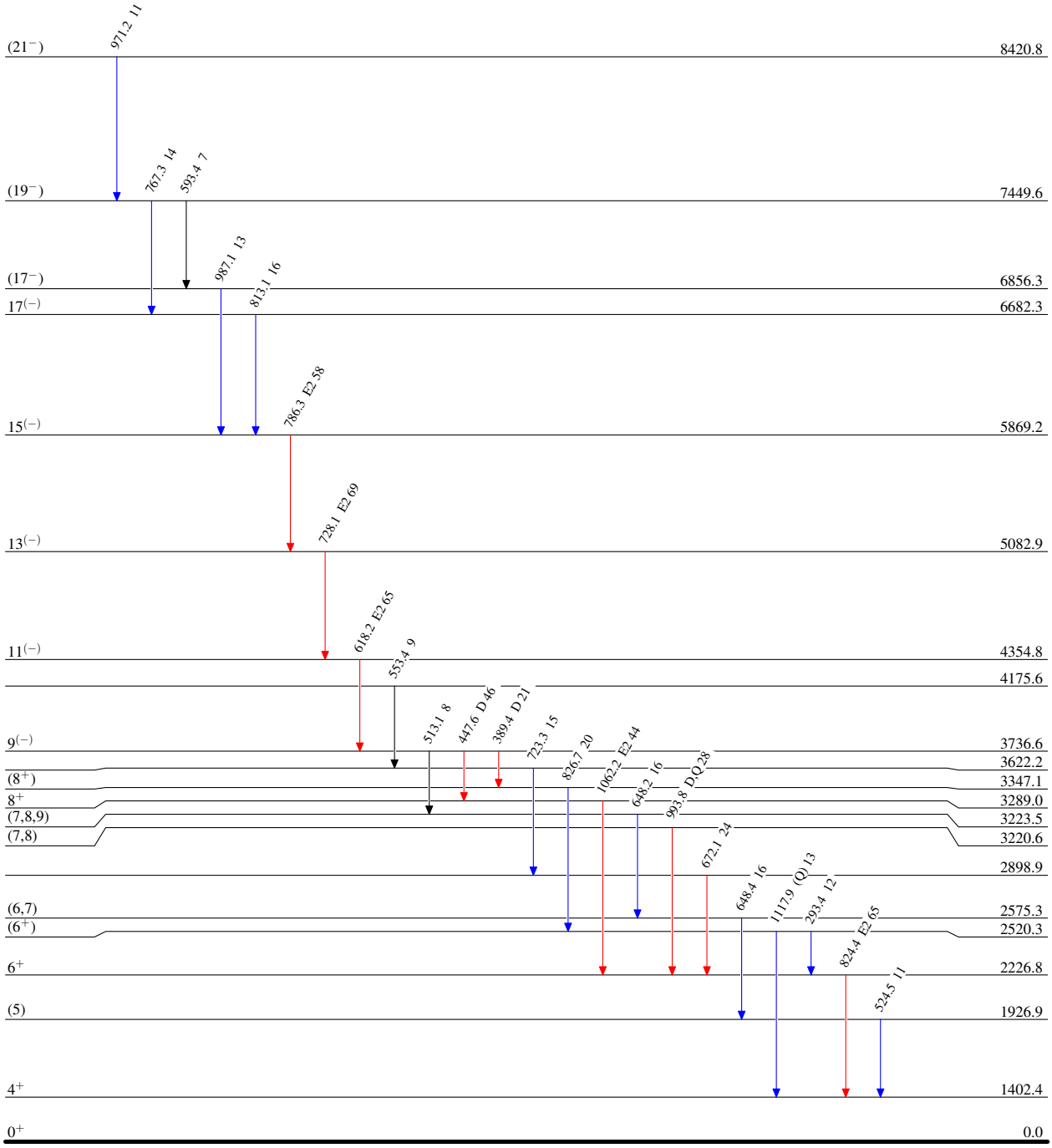
Intensities: Type not specified

Legend

$I_\gamma < 2\% \times I_\gamma^{max}$

$I_\gamma < 10\% \times I_\gamma^{max}$

$I_\gamma > 10\% \times I_\gamma^{max}$

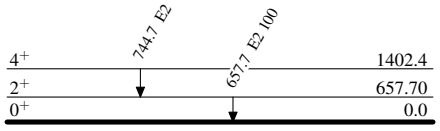


$^{110}_{52}Te_{58}$

^{54}Fe(^{58}Ni,2pγ) 1994Fa12

Level Scheme (continued)

Intensities: Type not specified



$^{110}_{52}Te_{58}$

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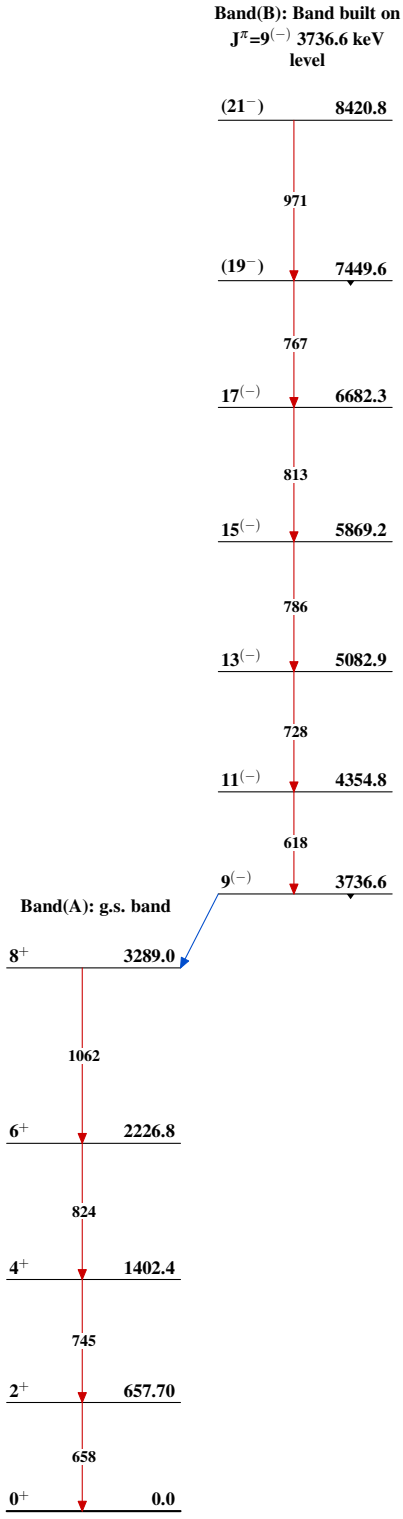

$^{110}_{52}Te_{58}$