^{30}Si(^{18}O,2p2nγ) 2001La33

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Jun Chen, Balraj Singh and John A. Cameron	NDS 112, 2357 (2011)	31-Jul-2011

2001La33: E=68 MeV ^{18}O beam produced from the VIVITRON accelerator at IReS Strasbourg. Target of metallic 800 μg/cm^2 ^{30}Si. High-efficiency EUROBALL IV germanium γ-array in coincidence with Recoil-Filter γ-ray detector. Measured Eγ, Iγ, $\gamma\gamma$, $\gamma\gamma$(recoil) coin, $\gamma\gamma(\theta)$(DCO), γ(lin pol). Deduced high-spin levels, J^π.

^{44}Ca Levels

E(level)†	Jπ‡	E(level)†	Jπ‡	E(level)†	Jπ‡	E(level)†	Jπ‡
0#	0+	3711.9@ 3	4−	5245.3& 3	7−	7880.0@ 4	10−
1157.0# 2	2+	3913.9& 3	5−	5646.8 3	(8+)	8286.3& 4	11−
2283.1# 2	4+	3922.8? 3	(5)	5971.3@ 3	8−	9788.6 7	
2656.4 4	2+	4092.1 4	6+	6657.7& 4	9−	9859.5@ 5	12−
3044.4 3	4+	4564.9? 4		7092.8 3	9−	10567.9& 6	13−
3285.0# 3	6+	4930.8@ 3	6−	7470.9 4		12188.2 10	
3307.5 3	3−	5087.6# 3	8+	7556.6 4	(9−)		

† From least-squares fit to Eγ data.
‡ As proposed in 2001La33 based on earlier assignments for low-lying levels, DCO and polarization data and band assignments.
# Band(A): yrast g.s. band.
@ Band(B): Band based on 4−, α=0.
& Band(b): Band based on 5−, α=1.

γ(^{44}Ca)

DCO ratios correspond to gates on ΔJ=2, E2 transitions and expected ratios are ≈1.0 for ΔJ=2, Q transitions and ≈2.0 for ΔJ=1, D transitions.

Eγ†	Iγ†	Ei(level)	Jπi	Ef	Jπf	Mult.	Comments
202.1 2	0.3‡	3913.9	5−	3711.9	4−		
323.4 2	0.9‡	7880.0	10−	7556.6	(9−)		DCO=2.1 4.
404.4 3	2.5 2	3711.9	4−	3307.5	3−		DCO=1.80 18.
406.6&	0.5	8286.3	11−	7880.0	10−		
435.1 3	0.7‡	7092.8	9−	6657.7	9−		
559.2 2	5.7 6	5646.8	(8+)	5087.6	8+	(M1)@	DCO=1.06 8.
628.9 1	5.8 2	3913.9	5−	3285.0	6+	(E1)#	DCO=1.81 14.
637.8 2	1.2 1	3922.8?	(5)	3285.0	6+		DCO=1.8 3.
651&		3307.5	3−	2656.4	2+		
651.0 3		4564.9?		3913.9	5−		
726.1 2	3.5 2	5971.3	8−	5245.3	7−	(M1)@	DCO=2.1 3.
761.3 1	5.8 3	3044.4	4+	2283.1	4+	(E2)#	DCO=1.09 12.
787.2 2	2.7 2	7880.0	10−	7092.8	9−	(M1)@	DCO=2.1 3.
807.0 3	6.2 7	4092.1	6+	3285.0	6+	(E2)#	DCO=0.97 11.
869.5 2	6.3 3	3913.9	5−	3044.4	4+	(E1)#	DCO=1.71 22.
878.4 2	1.3 1	3922.8?	(5)	3044.4	4+		DCO=1.9 3.
883.7 2	2.5 2	5971.3	8−	5087.6	8+		DCO=0.97 14.

Continued on next page (footnotes at end of table)

^{30}Si(^{18}O,2p2nγ) 2001La33 (continued)

γ(^{44}Ca) (continued)

E_γ †	I_γ †	E_i(level)	J_i^π	E_f	J_f^π	Mult.	Comments
1001.9 *1*	73 *4*	3285.0	6+	2283.1	4+	(E2)#	DCO=1.02 *4*.
1016.9 *2*	2.9 *2*	4930.8	6−	3913.9	5−		DCO=1.99 *23*.
1024.4 *3*	0.9‡	3307.5	3−	2283.1	4+		
1040.5 *3*	1.5 *1*	5971.3	8−	4930.8	6−		DCO=0.93 *17*.
1121.5 *4*	1.4‡	7092.8	9−	5971.3	8−		
1126.1 *2*	100 *6*	2283.1	4+	1157.0	2+	(E2)#	DCO=1.03 *4*.
1157.0 *2*		1157.0	2+	0	0+	(E2)#	DCO=1.02 *4*.
1218.8 *3*	1.4 *2*	4930.8	6−	3711.9	4−		
1331.3 *2*	6.3 *3*	5245.3	7−	3913.9	5−	(E2)#	DCO=1.02 *5*.
1412.4 *3*	4.8 *3*	6657.7	9−	5245.3	7−	(E2)#	DCO=1.03 *6*.
1428.8 *3*	1.1 *1*	3711.9	4−	2283.1	4+		DCO=1.08 *11*.
1445.9 *3*	1.8 *2*	7092.8	9−	5646.8	(8+)		DCO=1.78 *20*.
1499.4 *3*	0.9 *2*	2656.4	2+	1157.0	2+		
1554.7 *3*	4.0 *4*	5646.8	(8+)	4092.1	6+	(E2)#	DCO=1.02 *13*.
1570.0 *2*	8.1 *5*	6657.7	9−	5087.6	8+	(E1)#	DCO=1.95 *11*.
1584&		7556.6	(9−)	5971.3	8−		DCO=(1.57).
1628.6 *2*	8.0 *5*	8286.3	11−	6657.7	9−	(E2)#	DCO=1.04 *5*.
1802.6 *2*	33.9 *24*	5087.6	8+	3285.0	6+		DCO=0.97 *9*.
1809.1 *4*	3.3 *4*	4092.1	6+	2283.1	4+		DCO=(1.04).
1824.1 *2*	5.1 *4*	7470.9		5646.8	(8+)	#	DCO=1.16 *22*.
1887.3 *2*	5.4 *4*	3044.4	4+	1157.0	2+		DCO=1.02 *8*.
1908.6 *3*	2.0 *2*	7880.0	10−	5971.3	8−		DCO=1.04 *18*.
1960.2 *2*	6.1 *4*	5245.3	7−	3285.0	6+	(E1)#	DCO=1.81 *11*.
1979.5 *3*	2.3 *2*	9859.5	12−	7880.0	10−	(E2)#	DCO=1.08 *24*.
2005.1 *2*	1.2 *1*	7092.8	9−	5087.6	8+	(E1)#	DCO=1.85 *20*.
2150.5 *2*	2.7 *2*	3307.5	3−	1157.0	2+		DCO=1.81 *14*.
2281.5 *4*	2.3 *2*	10567.9	13−	8286.3	11−		DCO=1.04 *17*.
2317.6 *6*	4.0 *3*	9788.6		7470.9		#	DCO=1.0 to 1.6.
2361.6 *4*	4.3 *4*	5646.8	(8+)	3285.0	6+	(E2)#	DCO=1.05 *16*.
2383.2 *3*	2.8 *3*	7470.9		5087.6	8+	@	DCO=1.10 *19*.
2399.5 *7*	0.7 *2*	12188.2		9788.6			DCO=(2.05).
2468.9 *3*	0.9 *3*	7556.6	(9−)	5087.6	8+		DCO=1.7 *5*.

† From e-mail reply received March 6, 2002 from M. Lach by the compiler of the dataset in the XUNDL database.
‡ Deduced from intensity balance.
# Electric transition (E2 or E1) from γ(lin pol) (preliminary result).
@ Magnetic transition (M1 or M2) from γ(lin pol) (preliminary result).
& Placement of transition in the level scheme is uncertain.

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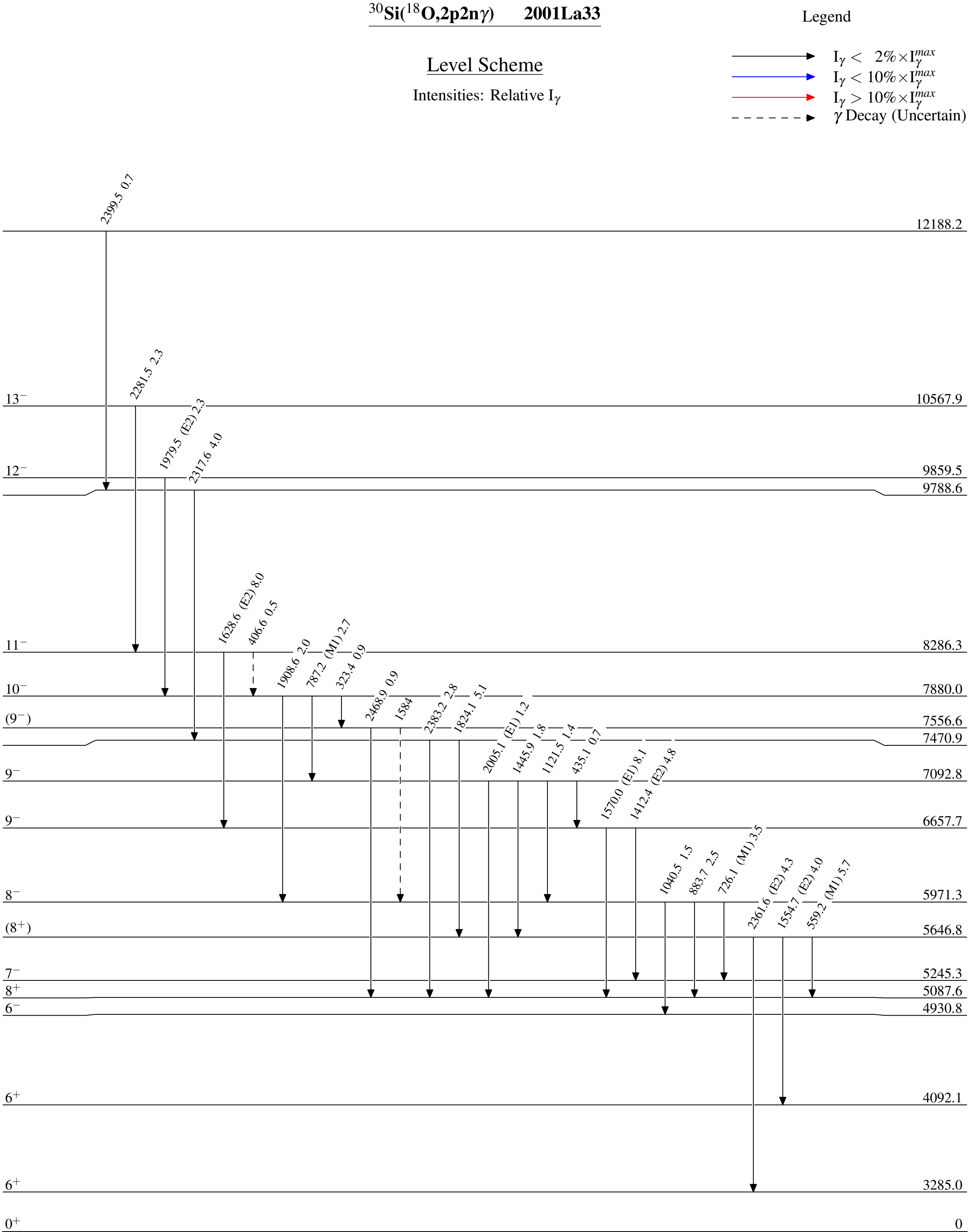
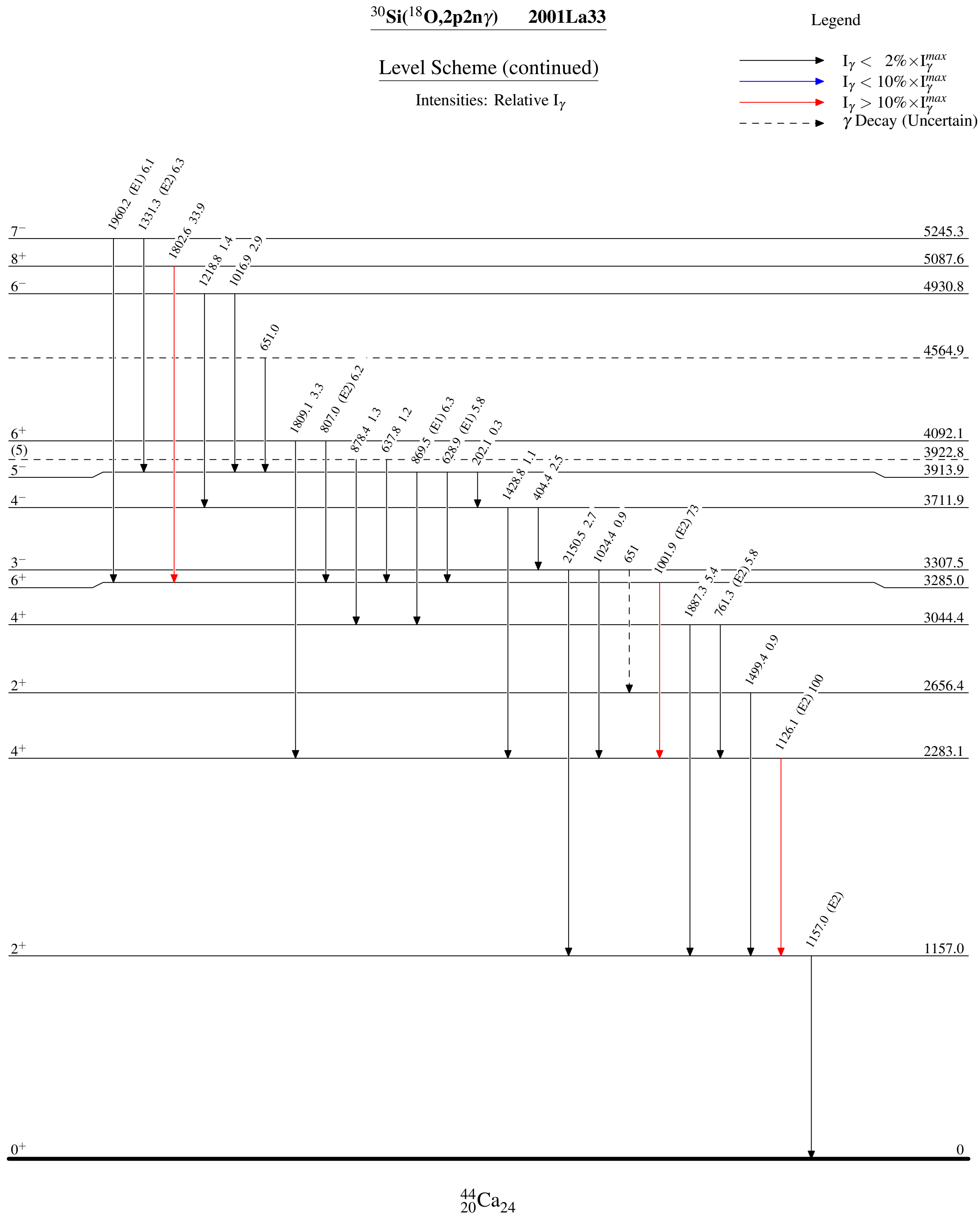
Level Scheme

Intensities: Relative I_γ



$^{44}_{20}Ca_{24}$



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Level Scheme (continued)
Intensities: Relative Iγ
Legend
Iγ < 2%×Iγmax
Iγ < 10%×Iγmax
Iγ > 10%×Iγmax
γ Decay (Uncertain)
7− 5245.3
8+ 5087.6
6− 4930.8
4564.9
6+ 4092.1
(5) 3922.8
5− 3913.9
4− 3711.9
3− 3307.5
6+ 3285.0
4+ 3044.4
2+ 2656.4
4+ 2283.1
2+ 1157.0
0+ 0
1960.2 (E1) 6.1
1331.3 (E2) 6.3
1802.6 33.9
1218.8 1.4
1016.9 2.9
651.0
1809.1 3.3
807.0 (E2) 6.2
878.4 1.3
637.8 1.2
869.5 (E1) 6.3
628.9 (E1) 5.8
202.1 0.3
1428.8 1.1
404.4 2.5
2150.5 2.7
1024.4 0.9
651
1001.9 (E2) 73
1887.3 5.4
761.3 (E2) 5.8
1499.4 0.9
1126.1 (E2) 100
1157.0 (E2)
44 20 Ca 24

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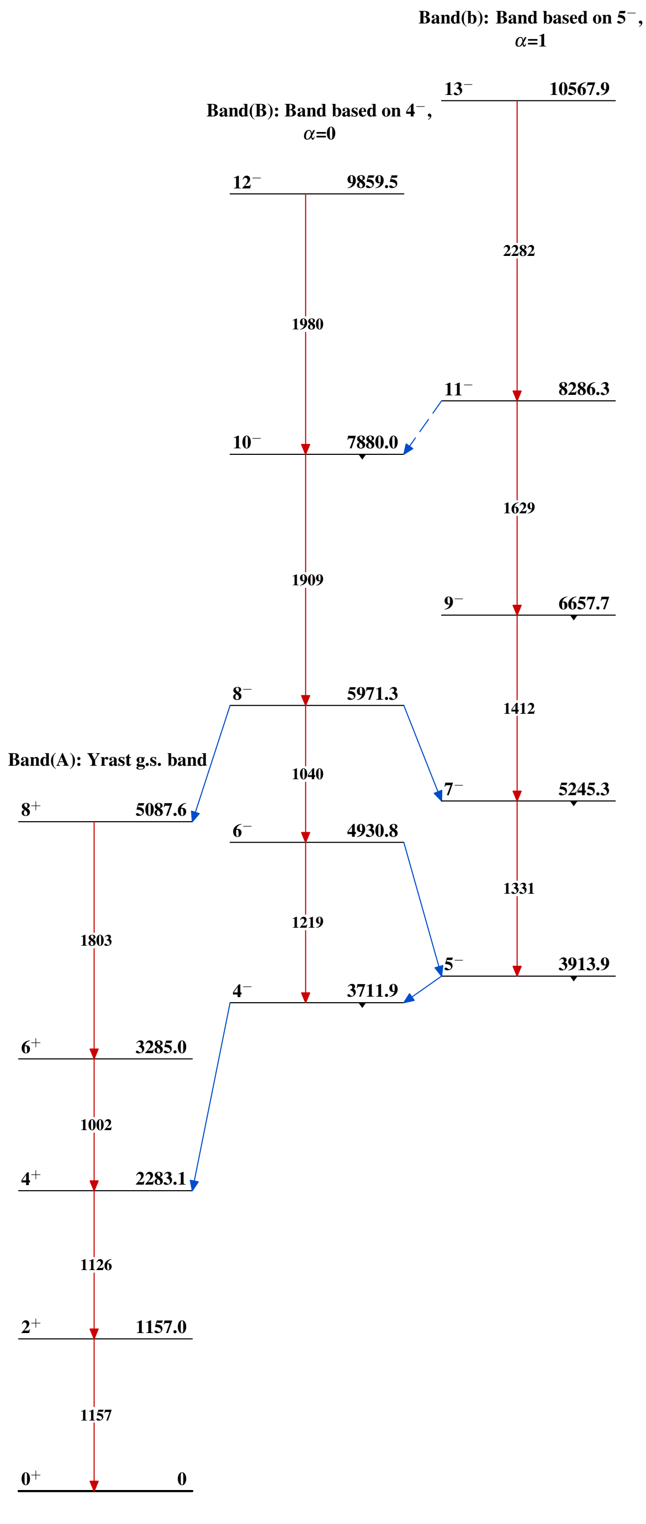

$^{44}_{20}Ca_{24}$