Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh and Jun Chen	NDS 172, 1 (2021)	31-Jan-2021

Q(β^-)=7506 *13*; S(n)=5371 *9*; S(p)=15989 *8*; Q(α)=−9166 *22* 2017Wa10
S(2n)=9540 *8*, S(2p)=30090 *300* (syst), Q(β^-n)=2758 *10* (2017Wa10).
Other measurements:
2011Ni01: ^{100}Sr nuclide produced in Be(^{238}U,F) reactions at E=345 MeV/nucleon produced by the cascade operation of the RIBF complex of accelerators at RIKEN.
Mass measurements: 2017De18, 2016Kl04, 2006Ha03, 2006MaZZ.
Optical isotope shift measurement: 1990Bu12.
Theory references: consult the NSR database (www.nndc.bnl.gov/nsr/) for 45 primary references, 38 dealing with nuclear structure calculations and seven with decay modes and half-lives.
Additional information 1.

^{100}Sr Levels

Cross Reference (XREF) Flags

A	^{100}Rb β^- decay (52 ms)	D	^{252}Cf SF decay
B	^{101}Rb β^-n decay (31 ms)	E	^{9}Be(^{238}U,Fγ)
C	^{248}Cm SF decay		

E(level)[†]	J$^\pi$	T$_{1/2}$	XREF	Comments
0.0[#]	0$^+$	200 ms *2*	ABCDE	%β^-=100; %β^-n=1.11 *21* Evaluated rms charge radius <r^2>$^{1/2}$=4.464 fm *24* (2013An02). Evaluated δ<r^2>(^{88}Sr,^{100}Sr)=1.867 fm^2 *15* (2013An02). T$_{1/2}$: weighted average of 181 ms *+16−13* (2011Ni01, (ion)β-correlated decay curve); 165 ms *24* (1993Ru01); 201 ms *1* (1986ReZU, supersedes 204 ms *2* in 1986Wa17); 193 ms *4* (1987Wo07,1986Wo01), 214 ms *8* (1983Mu19), 170 ms *80* (1978Ko29). Other: 200 ms *20* (1985IaZZ). Uncertainty was increased to 2 ms for value in 1986ReZU in the averaging procedure. Half-lives measured using decay curves for γ, β, neutrons, βn and β(ion) correlations. %β^-n: unweighted average of 1.48 *12* (1993Ru01), 1.1 *3* (1987PfZX), and 0.75 *8* (1986ReZU, supersedes 0.73 *3* in 1986Wa17). δ<r^2>(^{100}Sr,^{88}Sr)=1.83 fm^2 *7* (1988Si06,1990Bu12). Measured by non-optical detection in fast-beam laser spectroscopy. The ^{100}Sr isotope was mass separated from fission of uranium by 600-MeV protons. See also 1996Li25. Additional information 2.
129.18[#] *9*	(2$^+$)[‡]	3.91 ns *16*	A CDE	T$_{1/2}$: from $\gamma\gamma$(t) in β^- decay (1990Lh01). Other: 5.15 ns *20* (βce(t) 1979Az01).
416.99[#] *19*	(4$^+$)[‡]		A CDE	
851.8[#] *3*	(6$^+$)[‡]		A CD	
937.8 *4*	(0$^+$)		A	J$^\pi$: γ to (2$^+$); systematics of neighboring nuclides.
1257.05 *22*	(1,2$^+$)		A	J$^\pi$: 1257.1γ to 0$^+$.
1315.35 *23*	(1,2$^+$)		A	J$^\pi$: 1315.3γ to 0$^+$.
1326.6 *4*			A	J$^\pi$: 1197.4γ to (2$^+$).
1414.5 *3*	(3,4$^+$)		A	J$^\pi$: γs to (2$^+$) and (4$^+$); γ from (4$^-$).
1418.1[#] *11*	(8$^+$)[‡]	2.13 ps *31*	CD	T$_{1/2}$: from Doppler-broadened lineshape (2012Sm02) in ^{248}Cm SF decay, quoted uncertainty includes statistical and systematic.
1418.7 *4*			A	J$^\pi$: 1289.5γ to (2$^+$).
1500.68 *23*	(3,4$^+$)		A	J$^\pi$: 1371.3γ to (2$^+$) and 1083.7γ to (4$^+$); 118.0γ from (4$^-$).
1521.8 *4*			A	J$^\pi$: 1392.6γ to (2$^+$).
1560.4 *3*	(3,4$^+$)		A	J$^\pi$: 1143.4γ to (4$^+$); 58.3γ from (4$^-$); possible 1431.8γ to (2$^+$).

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Adopted Levels, Gammas (continued)

^{100}Sr Levels (continued)

E(level)[†]	Jπ	$T_{1/2}$	XREF	Comments
1618.71[@] *22*	(4⁻)	104 ns *19*	A E	Jπ: 1201.7γ to (4⁺); 4⁻ suggested by 1995Pf04 from possible configuration=ν3/2[411]⊗ν5/2[532]. $T_{1/2}$: unweighted average of 122 ns *9* (2012Ka36, γ(t) in (^{238}U,Fγ)) and 85 ns *7* (1995Pf04, γγ(t) in β⁻ decay). Weighted average is 99 ns *18*, but with reduced χ^2=10.5.
1648.0 *5*			A	Jπ: 1231.0γ to (4⁺).
1745.7 *5*			A	Jπ: 1328.7γ to (4⁺).
1780.5[@] *3*	(5⁻)		A	Jπ: 161.8γ to (4⁻); possible band member.
1956.7 *5*	(2⁺,3,4⁺)		A	Jπ: 1827.8γ to (2⁺) and 1539.4γ to (4⁺).
1974.9[@] *4*	(6⁻)		A	Jπ: 194.4γ to (5⁻); possible band member.
2055.99 *23*	(1,2⁺)		A	Jπ: 2055.9γ to 0⁺.
2108.0[#] *15*	(10⁺)[‡]	0.80 ps *12*	CD	$T_{1/2}$: from Doppler-broadened lineshape (2012Sm02) in ^{248}Cm SF decay, quoted uncertainty includes statistical and systematic.
2115.78 *23*	(2⁺)		A	Jπ: 2115.6γ to 0⁺ and 1699.0γ to (4⁺).
2211.52 *22*	(1,2⁺)		A	Jπ: 2211.6γ to 0⁺.
2277.47 *22*	(1,2⁺)		A	Jπ: 2277.3γ to 0⁺.
2482.7 *4*			A	Jπ: 864.0γ to (4⁻).
2505.9 *4*			A	Jπ: 2376.7γ to (2⁺).
3097.2 *5*	(1,2⁺)		A	Jπ: 3097.3γ to 0⁺.
3165.0 *6*	(1,2⁺)		A	Jπ: 3164.9γ to 0⁺.
3316.3? *6*			A	Jπ: 3187.1γ to (2⁺).
3346.0 *10*			A	Jπ: γ to (4⁺).

[†] From a least-squares fit to γ-ray energies.
[‡] Probable band assignment.
[#] Band(A): g.s. band. Measured Q_0=3.70 *25* (2001Ur01) from Doppler-shift attenuations for 566γ and 690γ.
[@] Band(B): K^π=(4⁻) band. Possible configuration=ν3/2[411]⊗ν5/2[532].

γ(^{100}Sr)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.	α[‡]	Comments
129.18	(2⁺)	129.2 *1*	100	0.0	0⁺	[E2]	0.397	B(E2)(W.u.)=104 *4* E_γ: other: 129.6 *5* from (^{238}U,Fγ).
416.99	(4⁺)	287.8 *2*	100	129.18	(2⁺)	[E2]	0.0225	E_γ: other: 288.1 *5* from (^{238}U,Fγ).
851.8	(6⁺)	434.8 *2*	100	416.99	(4⁺)			
937.8	(0⁺)	808.6 *3*	100	129.18	(2⁺)			
1257.05	(1,2⁺)	1127.8 *3*	41 *5*	129.18	(2⁺)			
		1257.1 *3*	100 *18*	0.0	0⁺			
1315.35	(1,2⁺)	1186.2 *3*	100 *11*	129.18	(2⁺)			
		1315.3 *4*	61 *11*	0.0	0⁺			
1326.6		1197.4 *4*	100	129.18	(2⁺)			
1414.5	(3,4⁺)	997.5 *4*	33 *8*	416.99	(4⁺)			
		1285.5 *4*	100 *11*	129.18	(2⁺)			
1418.1	(8⁺)	566.3	100	851.8	(6⁺)	[E2]		B(E2)(W.u.)=165 *24* E_γ: from ^{248}Cm SF decay.
1418.7		1289.5[#] *3*	100[#]	129.18	(2⁺)			
1500.68	(3,4⁺)	1083.7 *3*	33 *7*	416.99	(4⁺)			
		1371.3 *4*	100 *12*	129.18	(2⁺)			
1521.8		106.4[@] *6*	2.1 *12*	1414.5	(3,4⁺)			
		1392.6 *3*	100 *12*	129.18	(2⁺)			

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Adopted Levels, Gammas (continued)

γ(^{100}Sr) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.	α[‡]	Comments
1560.4	(3,4$^+$)	1143.4 *3*	100 *18*	416.99	(4$^+$)			
		1431.8[@] *5*	35 *24*	129.18	(2$^+$)			
1618.71	(4$^-$)	58.3 *2*	0.95 *24*	1560.4	(3,4$^+$)	[D,E2]	3.9 *34*	
		118.0 *2*	5.2 *10*	1500.68	(3,4$^+$)	[D,E2]	0.31 *25*	
		204.4 *3*	5.2 *10*	1414.5	(3,4$^+$)	[D,E2]		
		1201.7 *2*	100 *14*	416.99	(4$^+$)	[E1]		B(E1)(W.u.)=1.5×10^{-9} *4*
1648.0		1231.0 *4*	100	416.99	(4$^+$)			
1745.7		1328.7 *4*	100	416.99	(4$^+$)			
1780.5	(5$^-$)	161.8 *2*	100	1618.71	(4$^-$)	[M1,E2]	0.11 *6*	
1956.7	(2$^+$,3,4$^+$)	1539.4 *7*	100 *40*	416.99	(4$^+$)			
		1827.8 *6*	100 *50*	129.18	(2$^+$)			
1974.9	(6$^-$)	194.4[@] *3*	100	1780.5	(5$^-$)	[M1,E2]	0.06 *3*	
2055.99	(1,2$^+$)	637.4[@] *3*	20 *4*	1418.7				
		740.7 *5*	11 *4*	1315.35	(1,2$^+$)			
		1926.8 *3*	100 *11*	129.18	(2$^+$)			
		2055.9 *4*	39 *7*	0.0	0$^+$			
2108.0	(10$^+$)	689.9	100	1418.1	(8$^+$)	[E2]		B(E2)(W.u.)=164 *25* E_γ: from average of 690.0 in ^{248}Cm SF decay and 688.8 in ^{252}Cf SF decay.
2115.78	(2$^+$)	702.3[#@] *4*	<30[#]	1414.5	(3,4$^+$)			
		1699.0 *5*	35 *11*	416.99	(4$^+$)			
		1986.7 *4*	51 *14*	129.18	(2$^+$)			
		2115.6 *3*	100 *19*	0.0	0$^+$			
2211.52	(1,2$^+$)	2082.2 *3*	51 *10*	129.18	(2$^+$)			
		2211.6 *3*	100 *17*	0.0	0$^+$			
2277.47	(1,2$^+$)	2148.4 *3*	100 *12*	129.18	(2$^+$)			
		2277.3 *3*	24 *6*	0.0	0$^+$			
2482.7		702.3[#] *4*	<40[#]	1780.5	(5$^-$)			
		864.0 *3*	100 *25*	1618.71	(4$^-$)			
2505.9		2376.7[@] *4*	100	129.18	(2$^+$)			
3097.2	(1,2$^+$)	2967.8 *7*	71 *43*	129.18	(2$^+$)			
		3097.3 *7*	100 *36*	0.0	0$^+$			
3165.0	(1,2$^+$)	3035.9 *8*	100 *28*	129.18	(2$^+$)			
		3164.9 *8*	11 *6*	0.0	0$^+$			
3316.3?		3187.1[@] *6*	100	129.18	(2$^+$)			
3346.0		1289.5[#@] *3*	<600[#]	2055.99	(1,2$^+$)			
		2929.0 *9*	100 *57*	416.99	(4$^+$)			

[†] From ^{100}Rb β^- decay, unless otherwise noted.

[‡] Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.

[#] Multiply placed with undivided intensity.

[@] Placement of transition in the level scheme is uncertain.

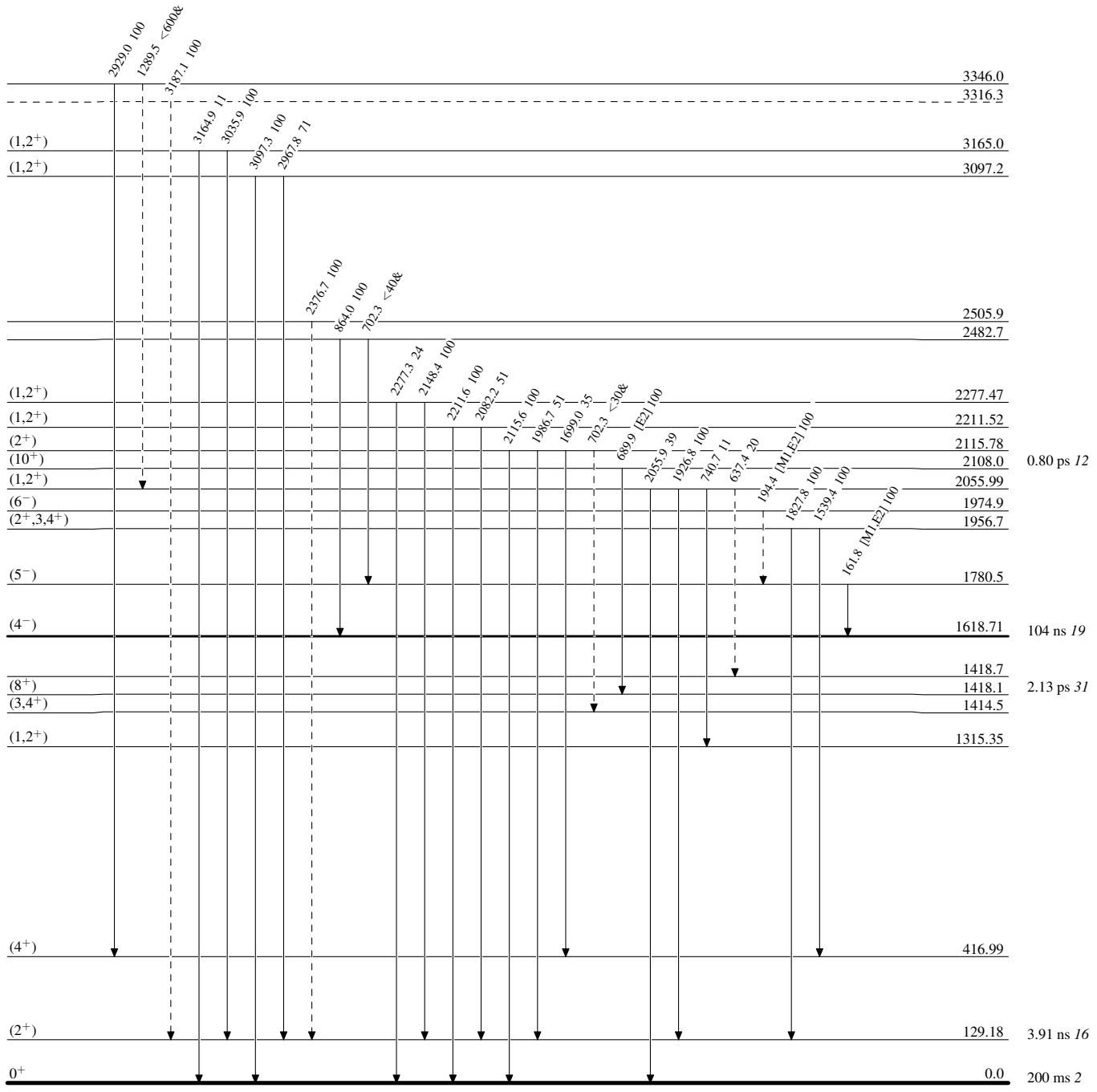
Adopted Levels, Gammas

Legend

Level Scheme

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given

γ Decay (Uncertain)



$^{100}_{38}Sr_{62}$

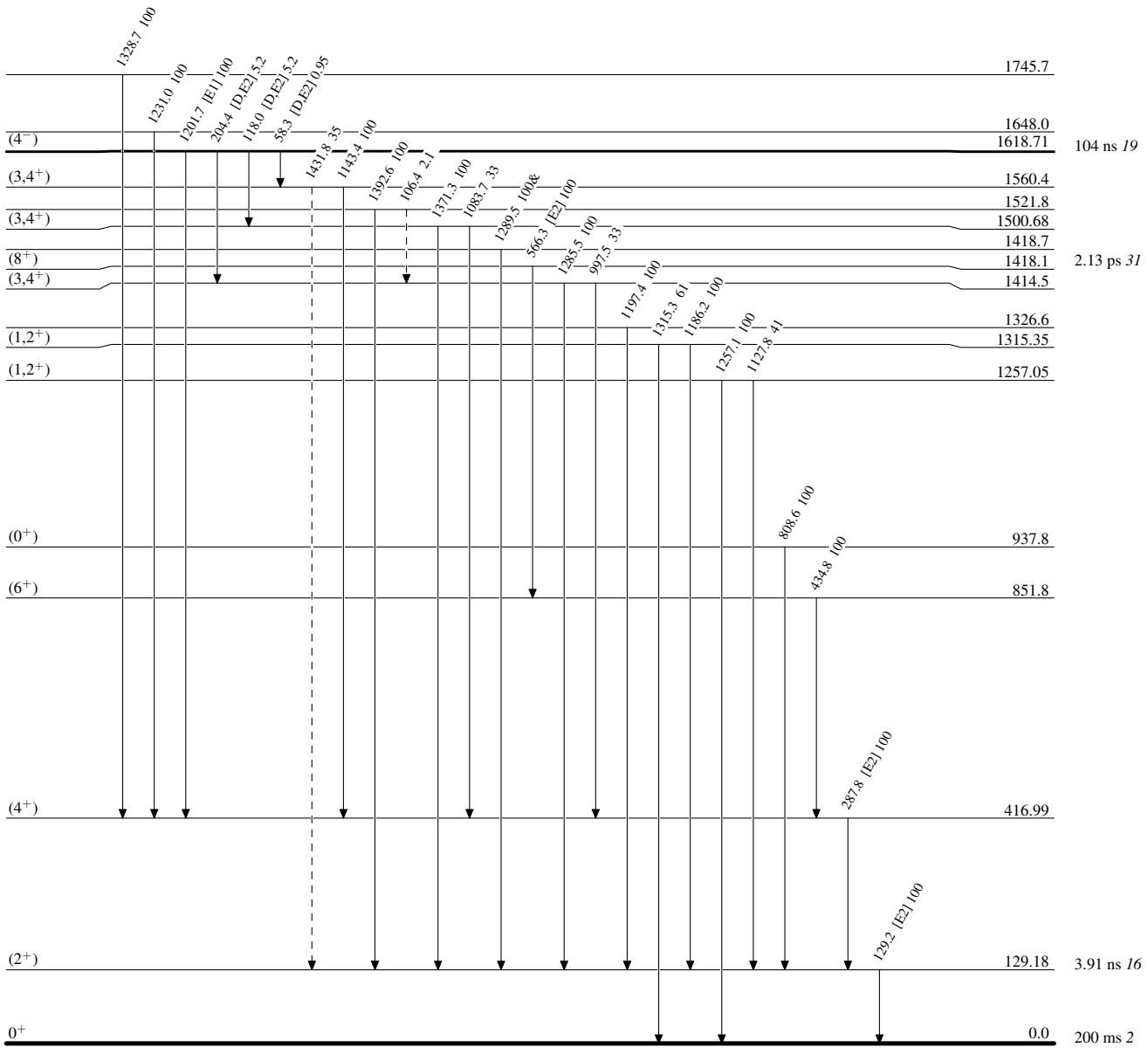
Adopted Levels, Gammas

Legend

Level Scheme (continued)

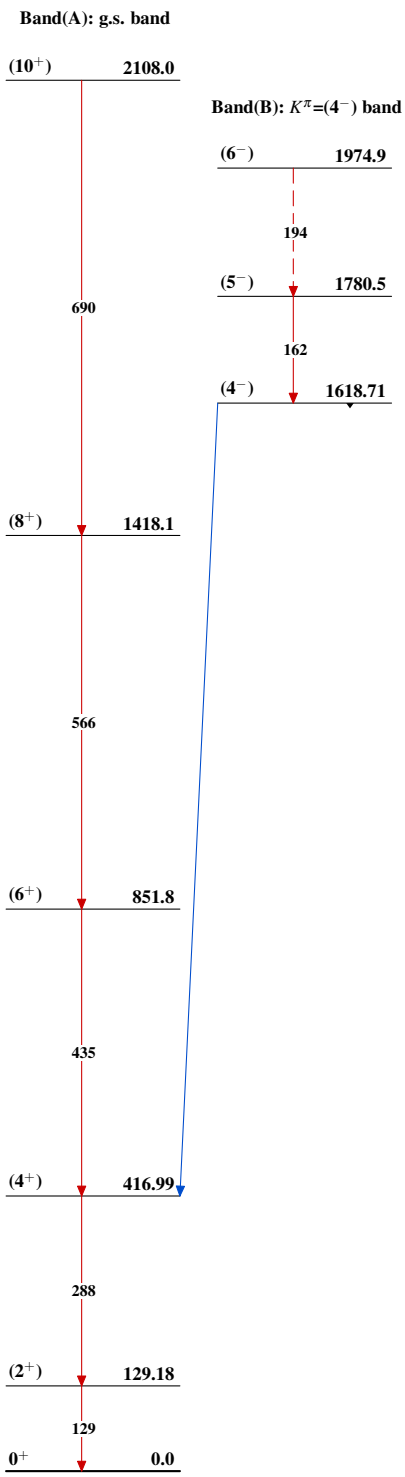
Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given

– – – – – – ► γ Decay (Uncertain)



$^{100}_{38}Sr_{62}$

Adopted Levels, Gammas



$^{100}_{38}Sr_{62}$