^{30}Na β^- decay (45.4 ms) 2020Ni05,1989Ba07,1984Gu19

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	M. S. Basunia, A. Chakraborty	NDS 197,1 (2024)	31-May-2024

Parent: ^{30}Na: E=0; $J^\pi=2^+$; $T_{1/2}$=45.4 ms *11*; Q(β^-)=17356 *5*; %β^- decay=100

^{30}Na-Q(β^-): from 2021Wa16.

Others: 2009Sc11, 1979De02, (2014Sh01, 2012Sh29 data are superseded by 2020Ni05).

2020Ni05: The ^{30}Na nuclear-spin-polarized beam, E=28 MeV, was produced by fragmentation of uranium carbide (UC_x) traget with 500 MeV protons at the ISAC facility of TRIUMF following collinear optical pumping at the polarizer and was delivered and stopped in vacuum on a 20−μm-thick Pt foil at the experimental setup for the β-γ spectroscopy. The polarization of ^{30}Na was 31% *1*. Eight sets of detector telescopes consisting of a coaxial HPGe and thin plastic scintillators(s). Six other telescopes were placed in a plane perpendicular to the polarization direction. Measured Eγ, Iγ, spatial asymmetry of β in coin with γ rays. Deduced level scheme, spin, parity.

1989Ba07: ^{30}Na was produced bombarding a uranium carbide target with 600 MeV protons from the CERN synchrocyclotron, mass separated in the ISOLDE facility; NE213 scintillator, 2 HPGe detectors and one neutron detector; Measured: Eγ, Iγ, $\gamma\gamma$ coin, γ-n coin.

1984Gu19: ^{30}Na was produced in the fragmentation of iridium target by 10 GeV protons from the CERN synchrotron, recoiled fragments were thermalized, ionized and mass-separated; Ge(Li) detector; measured Eγ, β-$\gamma\gamma$ coin, absolute Iγ.

2009Sc11: ^{30}Na source was produced by bombarding a UC_x/graphite target with 1.4 GeV protons at CERN PS Booster facility; Mass separation of the reaction products was done by the ISOLDE; Measured β(ce) coin using a liquid nitrogen cooled Si(Li) detector in conjunction with a (mini-orange) magnetic transport system. The γ-rays following β^- decay were measured using a Ge detector.

1979De02: Measured and reported Eγ and %Iγ for 7 transitions, 4 of which are listed in the comments. 336.3, 1041.2, and 1510.7γ are not reported/confirmed in the later works.

Level scheme is from 2020Ni05.

In 1989Ba07, excited level at 4414.7, $J^\pi=(1,2)^+$, is proposed with 947.0 and 4414.4 depopulating γ-rays. In 2020Ni05, the 4414.9γ (most likely the same as 4414.4γ) is reassigned from 5898-keV level based on coincidence measurements and the other Eγ is not reported. Evaluators omit the 4414-keV level in the dataset.

^{30}Mg Levels

E(level)†	J^π‡	$T_{1/2}$	Comments
0@	0^+	319 ms *6*	$T_{1/2}$: from the Adopted Levels.
1483.07@ *11*	2^+	1.53 ps *20*	J^π,$T_{1/2}$: from the Adopted Levels.
1788.04& *16*	0^+	3.8 ns *4*	J^π: from angular correlation measurements of 305γ and 1483γ in 2020Ni05, 1788γ E0 to 0^+ g.s. $T_{1/2}$: from the Adopted Levels. In 2020Ni05 − 3.6 ns *4* measured by the centroid shift method.
2468.02& *12*	(2^+)	<5 ps	J^π,$T_{1/2}$: from the Adopted Levels.
3303.79d *23*	(1,2,3)		
3381.52@ *19*	(4^+)		
3461.44d *14*	(2)		
3462.78d *16*	(1,2)		
3542.59a *14*	(2^+)		J^π: in 2020Ni05 $J^\pi=(2^+)$ is proposed based on the feeding from (3^+) at 4695.
4259.53d *25*	(2,3,4)		
4297.77d *20*	$(1,2^+)$		J^π: from Adopted Levels. Other: (1,2) in 1984Gu19.
4683.62d *19*	(2,3,4)		
4694.71a *21*	(3^+)#		Asymmetry parameter A=0.4 *3* (2020Ni05).

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^{30}Na β^- decay (45.4 ms) 2020Ni05,1989Ba07,1984Gu19 (continued)

^{30}Mg Levels (continued)

E(level)[†]	Jπ[‡]	Comments
4783.25[d] *22*	(2,3,4)	
4967.37[b] *12*	1+[#]	Asymmetry parameter A=−1.01 *7* (2020Ni05).
5022.47[c] *15*	1+[#]	Asymmetry parameter A=−0.94 *9* (2020Ni05).
5095.11[c] *13*	2+[#]	Asymmetry parameter A=−0.28 *9* (2020Ni05).
5413.53[b] *12*	2+[#]	Asymmetry parameter A=−0.34 *8* (2020Ni05).
5619.13[d] *19*	(1+,2+)[#]	Asymmetry parameter A=−0.9 *4* (2020Ni05).
5898.38[d] *18*	1+[#]	Asymmetry parameter A=−0.9 *2* (2020Ni05).
5921.8[d] *4*		
6066.24[d] *15*	3+[#]	Asymmetry parameter A=0.8 *2* (2020Ni05).
6340+x		Additional information 1. E(level): from S(n)=6340 *1* (^{30}Mg) and x<11016 *5* [from Q(β^-) (^{30}Na)=17356 *5*-S(n)(^{30}Mg) (2021Wa16)].
10004+y		Additional information 2. E(level): from S(2n)=10004.1 *13* (^{30}Mg) and y<7352 *5* [from Q(β^-) (^{30}Na)=17356 *5*-S(2n)(^{30}Mg) (2021Wa16)].

[†] From a least-squares fit to the γ-ray energies, ΔE=1 keV assumed, if missing.
[‡] From Adopted Levels.
[#] Based on allowed transition from 2+ g.s. in ^{30}Na β^- decay and β asymmetry measurements for polarized ^{30}Na. Asymmetry parameter (A) values of −1.0, −0.33, and +0.67 were expected for spins 1+, 2+, and 3+, respectively (2020Ni05).
[@] Band(A): g.s. band.
[&] Band(B): Deformed band.
[a] Band(C): γ-vibrational band.
[b] Collective structure.
[c] Spherical structure.
[d] Other structure.

β^- radiations

E(decay)	E(level)	Iβ−[†]	Log *ft*	Comments
(4×10^3[‡] *4*)	10004+y	1.27 *25*		Iβ−: %β-2n=1.27 *25* (from ^{30}Na Adopted Levels).
(6×10^3[‡] *6*)	6340+x	30 *5*		Iβ−: %β-n=30 *5* (from ^{30}Na Adopted Levels).
(11290 *5*)	6066.24	3.6 *4*	5.56 *5*	av Eβ=5387.0 *25*
(11434 *5*)	5921.8	0.49 *16*	6.45 *15*	av Eβ=5458.3 *25*
(11458 *5*)	5898.38	2.5 *5*	5.74 *9*	av Eβ=5469.9 *25*
(11737 *5*)	5619.13	0.95 *18*	6.21 *9*	av Eβ=5607.9 *25*
(11943 *5*)	5413.53	10.0 *9*	5.23 *4*	av Eβ=5709.5 *25*
(12261 *5*)	5095.11	9.5 *10*	5.31 *5*	av Eβ=5866.9 *25*
(12334 *5*)	5022.47	8.0 *8*	5.39 *5*	av Eβ=5902.8 *25*
(12389 *5*)	4967.37	22.1 *19*	4.96 *4*	av Eβ=5930.0 *25*
(12573 *5*)	4783.25	<0.11	>7.3	av Eβ=6021.0 *25*
(12661 *5*)	4694.71	2.5 *3*	5.95 *6*	av Eβ=6064.7 *25*
(12672 *5*)	4683.62	0.50 *9*	6.65 *8*	av Eβ=6070.2 *25*
(13097 *5*)	4259.53	0.26 *8*	7.00 *14*	av Eβ=6279.7 *25*
(13813 *5*)	3542.59	<0.6	>6.8	av Eβ=6633.8 *25*
(13893 *5*)	3462.78	1.6 *6*	6.34 *17*	av Eβ=6673.2 *25*
(13895 *5*)	3461.44	2.5 *15*	6.1 *3*	av Eβ=6673.9 *25*
(13975 *5*)	3381.52	<0.2	>7.3	av Eβ=6713.3 *25*
(14888 *5*)	2468.02	2.0 *6*	6.39 *13*	av Eβ=7164.2 *25*
(15873 *5*)	1483.07	3.3 *18*	6.30 *24*	av Eβ=7650.1 *25*

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^{30}Na β^- decay (45.4 ms) **2020Ni05,1989Ba07,1984Gu19 (continued)**

β^- radiations (continued)

† Absolute intensity per 100 decays.
‡ Estimated for a range of levels.

^{30}Na β^- decay (45.4 ms) 2020Ni05,1989Ba07,1984Gu19 (continued)

$\gamma(^{30}Mg)$

Iγ normalization: from ΣI(γ+ce) to (g.s.)=69 *5*. %β^-n=30 *5*; %β^-2n=1.27 *25*.

E_γ [†]	I_γ [†a]	E_i(level)	J_i^π	E_f	J_f^π	Mult.	α [&]	Comments
305.1 *2*	13.3 *14*	1788.04	0^+	1483.07	2^+	[E2]	9.20×10^{-4} *13*	%Iγ=6.2 *8* α(K)=0.000862 *12*; α(L)=5.55×10^{-5} *8*; α(M)=2.042×10^{-6} *29* E_γ: weighted average of 305.4 *5* (1984Gu19), 305.6 *3* (1989Ba07), 304.6 *10* (1979De02), 304.8 *2* (2020Ni05). I_γ: unweighted average of 12.5 *13* (1984Gu19), 11.4 *7* (1989Ba07), 16.1 *12* (2020Ni05). Other: %Iγ=3.0 *5* (1979De02). Mult.: assumed from level scheme in 2009Sc11.
669.5 *4*	0.34 *12*	4967.37	1^+	4297.77	$(1,2^+)$			%Iγ=0.16 *6*
724.4 *4*	0.22 *8*	5022.47	1^+	4297.77	$(1,2^+)$			%Iγ=0.10 *4*
797.4 *3*	0.95 *9*	5095.11	2^+	4297.77	$(1,2^+)$			%Iγ=0.44 *5*
955.7 *2*	1.34 *12*	4259.53	(2,3,4)	3303.79	(1,2,3)			%Iγ=0.62 *7*
985.0[‡] *2*	14.5 *8*	2468.02	(2^+)	1483.07	2^+			%Iγ=6.7 *6* E_γ: weighted average of 985.4 *9* (1984Gu19), 985.1 *4* (1989Ba07), 985.4 *10* (1979De02), 984.9 *2* (2020Ni05). I_γ: weighted average of 14.2 *8* (1984Gu19), 14.5 *9* (1989Ba07), 14.9 *12* (2020Ni05). Other: %Iγ=12.0 *5* (1979De02).
994.7 *3*	0.41 *8*	3462.78	(1,2)	2468.02	(2^+)			%Iγ=0.19 *4*
1152.0 *4*	1.89 *16*	4694.71	(3^+)	3542.59	(2^+)			%Iγ=0.88 *10*
1221.9 *3*	0.47 *9*	4683.62	(2,3,4)	3461.44	(2)			%Iγ=0.22 *4*
1283.0 *2*	0.95 *12*	6066.24	3^+	4783.25	(2,3,4)			%Iγ=0.44 *6*
1382.3 *2*	0.38 *6*	6066.24	3^+	4683.62	(2,3,4)			%Iγ=0.176 *31*
1479.5 *5*	0.29 *17*	4783.25	(2,3,4)	3303.79	(1,2,3)			%Iγ=0.13 *8*
1483.1 *2*	100	1483.07	2^+	0	0^+	E2	9.06×10^{-5} *13*	%Iγ=46.4 *34* α(K)=7.84×10^{-6} *11*; α(L)=5.04×10^{-7} *7*; α(M)=1.866×10^{-8} *26* α(IPF)=8.22×10^{-5} *12* E_γ: weighted average of 1482.8 *5* (1984Gu19), 1483.1 *2* (2020Ni05), 1484.2 *10* (1979De02). Other: 1482.0 *3* (1989Ba07 – possibly doublet considering the nearby 1479.5γ in 2020Ni05). I_γ: others: %Iγ=74 *4* (1979De02), %Iγ=39 *4* (2020Ni05).
1505.9[‡] *2*	8.1 *6*	4967.37	1^+	3461.44	(2)			%Iγ=3.8 *4* E_γ: weighted average of 1505.7 *10* (1984Gu19), 1505.8 *4* (1989Ba07), 1505.9 *2* (2020Ni05). I_γ: weighted average of 8.2 *7* (1984Gu19), 8.4 *6* (1989Ba07), 7.8 *6* (2020Ni05).
1552.4[‡] *2*	4.1 *4*	5095.11	2^+	3542.59	(2^+)			%Iγ=1.90 *23* E_γ: weighted average of 1551.9 *18* (1984Gu19), 1552.4 *4* (1989Ba07),

^{30}Na β^- decay (45.4 ms) 2020Ni05,1989Ba07,1984Gu19 (continued)

$\gamma(^{30}Mg)$ (continued)

E_γ [†]	I_γ [†a]	E_i(level)	J_i^π	E_f	J_f^π	Mult.	$I_{(\gamma+ce)}$ [b]	Comments
								1552.4 *2* (2020Ni05).
								I_γ: unweighted average of 4.2 *6* (1984Gu19), 4.7 *4* (1989Ba07), 3.36 *28* (2020Ni05).
1559.6 *2*	3.1 *3*	5022.47	1^+	3462.78	(1,2)			%Iγ=1.44 *17*
								E_γ: weighted average of 1560.3 *18* (1984Gu19), 1559.6 *4* (1989Ba07), 1559.6 *2* (2020Ni05).
								I_γ: weighted average of 3.2 *6* (1984Gu19), 3.6 *3* (1989Ba07), 2.78 *23* (2020Ni05).
1633.2 *4*	1.47 *13*	5095.11	2^+	3461.44	(2)			%Iγ=0.68 *8*
1788		1788.04	0^+	0	0^+	E0	2.0×10^{-3} *4*	Mult.: from 2009Sc11, a monopole strength of ρ^2(E0)=0.026 *8* is determined from E0(K+L) conversion intensity to the E2 γ-ray intensity and γ-ray lifetime measurements.
								$I_{(\gamma+ce)}$: I(E0) determined by 2009Sc11 from I(E0:K+L)(1789)/Iγ(306).
								ρ^2(E0)=0.026 *8* (2009Sc11).
1789.5[‡] *10*	4.2 *7*	5095.11	2^+	3303.79	(1,2,3)			%Iγ=1.95 *35*
								E_γ: unweighted average of 1789.2 *18* (1984Gu19), 1788.0 *7* (1989Ba07), 1791.3 *2* (2020Ni05). In 1989Ba07, placement from 1790 keV level – unlikely for an E0 transition.
								I_γ: unweighted average of 5.5 *7* (1984Gu19), 4.0 *6* (1989Ba07), 3.21 *27* (2020Ni05).
1806.6 *3*	0.77 *11*	6066.24	3^+	4259.53	(2,3,4)			%Iγ=0.36 *6*
1820.5 *3*	5.6 *4*	3303.79	(1,2,3)	1483.07	2^+			%Iγ=2.60 *27*
								E_γ: placement in 2020Ni05. Weighted average of 1820.7 *9* (1984Gu19), 1820.2 *6* (1989Ba07), 1820.6 *3* (2020Ni05).
								I_γ: weighted average of 6.2 *8* (1984Gu19), 5.4 *4* (1989Ba07), 5.8 *5* (2020Ni05).
1871.0 *2*	1.27 *12*	5413.53	2^+	3542.59	(2^+)			%Iγ=0.59 *7*
								E_γ: weighted average of 1871.7 *18* (1984Gu19), 1870.7 *10* (1989Ba07), 1871.0 *2* (2020Ni05).
								I_γ: weighted average of 1.7 *7* (1984Gu19), 1.3 *2* (1989Ba07), 1.24 *12* (2020Ni05).
1898.3 *2*	2.80 *24*	3381.52	(4^+)	1483.07	2^+			%Iγ=1.30 *15*
1951.9[#] *3*	3.9[#] *6*	5413.53	2^+	3461.44	(2)			%Iγ=1.81 *31*
								E_γ: weighted average of 1951.5 *7* (1989Ba07) and 1952.0 *3* (2020Ni05).
								I_γ: unweighted average of 4.5 *3* (1989Ba07) and 3.3 *4* (2020Ni05).
1978.2 *2*	22 *3*	3461.44	(2)	1483.07	2^+			%Iγ=10.2 *16*
								E_γ: weighted average of 1978.4 *9* (1984Gu19), 1978.0 *6* (1989Ba07), 1979.8 *10* (1979De02), 1978.1 *2* (2020Ni05).
								I_γ: unweighted average of 23.8 *16* (1984Gu19), 24.7 *15* (1989Ba07), 16.3 *23* (2020Ni05). Other: %Iγ=15.0 *15* (1979De02).
1979.6 *2*	7.0 *10*	3462.78	(1,2)	1483.07	2^+			%Iγ=3.2 *5*

^{30}Na β^- decay (45.4 ms) 2020Ni05,1989Ba07,1984Gu19 (continued)

$\gamma(^{30}Mg)$ (continued)

E_γ †	I_γ †[a]	E_i(level)	J_i^π	E_f	J_f^π	Comments
2059.5 *2*	1.5 *5*	3542.59	(2^+)	1483.07	2^+	%Iγ=0.70 *24* E_γ: weighted average of 2059.0 *6* (1989Ba07), 2059.5 *2* (2020Ni05). I_γ: unweighted average of 2.0 *3* (1989Ba07), 0.99 *11* (2020Ni05).
2157.6 *2*	0.85 *32*	5619.13	$(1^+,2^+)$	3461.44	(2)	%Iγ=0.39 *15*
2226.6 *3*	1.10 *32*	4694.71	(3^+)	2468.02	(2^+)	%Iγ=0.51 *15*
2458.9 *4*	0.85 *33*	5921.8		3462.78	(1,2)	%Iγ=0.39 *16*
2499.2 *2*	1.69 *15*	4967.37	1^+	2468.02	(2^+)	%Iγ=0.78 *9* E_γ: weighted average of 2498.7 *10* (1984Gu19), 2497.8 *13* (1989Ba07), 2499.3 *2* (2020Ni05). I_γ: weighted average of 1.9 *6* (1984Gu19), 1.8 *2* (1989Ba07), 1.61 *15* (2020Ni05).
2605.1 *3*	1.73 *14*	6066.24	3^+	3461.44	(2)	%Iγ=0.80 *9*
2618.0 *5*	0.21 *6*	5921.8		3303.79	(1,2,3)	%Iγ=0.097 *29*
2627.1 *2*	1.94 *22*	5095.11	2^+	2468.02	(2^+)	%Iγ=0.90 *12* E_γ: weighted average of 2626.0 *13* (1989Ba07) and 2627.1 *2* (2020Ni05). I_γ: weighted average of 2.3 *3* (1989Ba07), 1.81 *18* (2020Ni05).
2684.5 *2*	2.67 *24*	6066.24	3^+	3381.52	(4^+)	%Iγ=1.24 *14* E_γ,I_γ: other: 2685.6 *12*, 2.2 *8*, respectively (1984Gu19).
2945.3 *2*	1.20 *11*	5413.53	2^+	2468.02	(2^+)	%Iγ=0.56 *7*
3179.3 *2*	11.9 *9*	4967.37	1^+	1788.04	0^+	%Iγ=5.5 *6* E_γ: weighted average of 3179.8 *9* (1984Gu19), 3178.8 *10* (1989Ba07), 3179.3 *2* (2020Ni05). I_γ: weighted average of 10.5 *16* (1984Gu19), 12.6 *9* (1989Ba07), 11.5 *10* (2020Ni05).
3200.0 *3*	0.98 *14*	4683.62	(2,3,4)	1483.07	2^+	%Iγ=0.45 *7*
3211.5 *3*	2.30 *29*	4694.71	(3^+)	1483.07	2^+	%Iγ=1.07 *16*
3300.1 *4*	0.61 *8*	4783.25	(2,3,4)	1483.07	2^+	%Iγ=0.28 *4*
3430.2 *2*	3.0 *8*	5898.38	1^+	2468.02	(2^+)	%Iγ=1.4 *4* E_γ: other: 3430.2 *12* (1984Gu19). I_γ: weighted average of 2.5 *8* (1984Gu19), 3.7 *9* (2020Ni05).
3484.1 *2*	10.7 *9*	4967.37	1^+	1483.07	2^+	%Iγ=5.0 *6* E_γ: weighted average of 3484.6 *10* (1984Gu19), 3484.0 *10* (1989Ba07), 3484.1 *2* (2020Ni05). I_γ: weighted average of 9.8 *16* (1984Gu19), 12.1 *8* (1989Ba07), 9.6 *8* (2020Ni05).
3539.4 *5*	1.8 *3*	5022.47	1^+	1483.07	2^+	%Iγ=0.83 *15* E_γ: weighted average of 3541.1 *11* (1989Ba07), 3539.3 *3* (2020Ni05). Other: 3542.0 *9* (1984Gu19 – doublet), I_γ: weighted average of 1.6 *7* (1989Ba07), 1.83 *29* (2020Ni05). Other: 6.8 *12* (1984Gu19 – doublet).
3542.3 *3*	6.1 *4*	3542.59	(2^+)	0	0^+	%Iγ=2.83 *27* E_γ: weighted average of 3542.0 *9* (1984Gu19 – possible doublet), 3541.1 *11* (1989Ba07), 3542.4 *3* (2020Ni05). I_γ: weighted average of 6.8 *12* (1984Gu19 – possibly doublet), 6.7 *7* (1989Ba07), 5.5 *6* (2020Ni05).
3597.9 *3*	0.90 *10*	6066.24	3^+	2468.02	(2^+)	%Iγ=0.42 *6*
3611.9 *4*	0.8 *1*	5095.11	2^+	1483.07	2^+	%Iγ=0.37 *5* E_γ: weighted average of 3611.0 *14* (1989Ba07) and 3612.0 *4* (2020Ni05). I_γ: weighted average of 0.8 *1* (1989Ba07), 0.74 *33* (2020Ni05).

$^{30}_{12}Mg_{18}$-6

^{30}Na β^- decay (45.4 ms) 2020Ni05,1989Ba07,1984Gu19 (continued)

$\gamma(^{30}Mg)$ (continued)

E_γ †	I_γ †[a]	E_i(level)	J_i^π	E_f	J_f^π	Comments
3625.2 *3*	2.88 *25*	5413.53	2^+	1788.04	0^+	%Iγ=1.34 *15* E_γ: weighted average of 3625.8 *15* (1984Gu19), 3625.0 *11* (1989Ba07), 3625.2 *3* (2020Ni05). I_γ: weighted average of 1.9 *7* (1984Gu19), 3.1 *3* (1989Ba07), 2.85 *25* (2020Ni05).
3930.2 *2*	6.1 *5*	5413.53	2^+	1483.07	2^+	%Iγ=2.83 *31* E_γ: weighted average of 3930.6 *12* (1984Gu19), 3929.7 *13* (1989Ba07), 3930.2 *2* (2020Ni05). I_γ: weighted average of 6.3 *12* (1984Gu19), 6.6 *5* (1989Ba07), 5.6 *5* (2020Ni05).
4297.2 *4*	1.34 *35*	4297.77	$(1,2^+)$	0	0^+	%Iγ=0.62 *17*
4414.9 *2*	2.49 *22*	5898.38	1^+	1483.07	2^+	%Iγ=1.15 *13*
4583.0 *2*	0.42 *25*	6066.24	3^+	1483.07	2^+	%Iγ=0.19 *12*
[x]4685.4[@] *18*	2.2[@] *10*					%Iγ=1.0 *5*
4966.8 *2*	15.0 *11*	4967.37	1^+	0	0^+	%Iγ=7.0 *7* E_γ: weighted average of 4967.6 *9* (1984Gu19), 4966.5 *12* (1989Ba07), 4966.8 *1* (2020Ni05). I_γ: weighted average of 11.3 *25* (1984Gu19), 16.2 *10* (1989Ba07), 14.1 *12* (2020Ni05).
5022.1 *2*	12.1 *8*	5022.47	1^+	0	0^+	%Iγ=5.6 *5* E_γ: weighted average of 5021.6 *9* (1984Gu19), 5021.7 *12* (1989Ba07), 5022.1 *2* (2020Ni05). I_γ: weighted average of 10.8 *23* (1984Gu19), 12.7 *8* (1989Ba07), 11.4 *10* (2020Ni05).
5094.7 *2*	7.0 *4*	5095.11	2^+	0	0^+	%Iγ=3.25 *30* E_γ: weighted average of 5094.6 *12* (1984Gu19), 5094.3 *12* (1989Ba07), 5094.7 *2* (2020Ni05). I_γ: weighted average of 5.8 *14* (1984Gu19), 7.4 *5* (1989Ba07), 6.6 *6* (2020Ni05).
5413.0 *2*	6.1 *4*	5413.53	2^+	0	0^+	%Iγ=2.83 *27* E_γ: weighted average of 5412.4 *12* (1984Gu19), 5411.8 *12* (1989Ba07), 5413.0 *2* (2020Ni05). I_γ: weighted average of 4.9 *12* (1984Gu19), 6.4 *4* (1989Ba07), 5.8 *5* (2020Ni05).
5618.6 *3*	1.20 *13*	5619.13	$(1^+,2^+)$	0	0^+	%Iγ=0.56 *7*

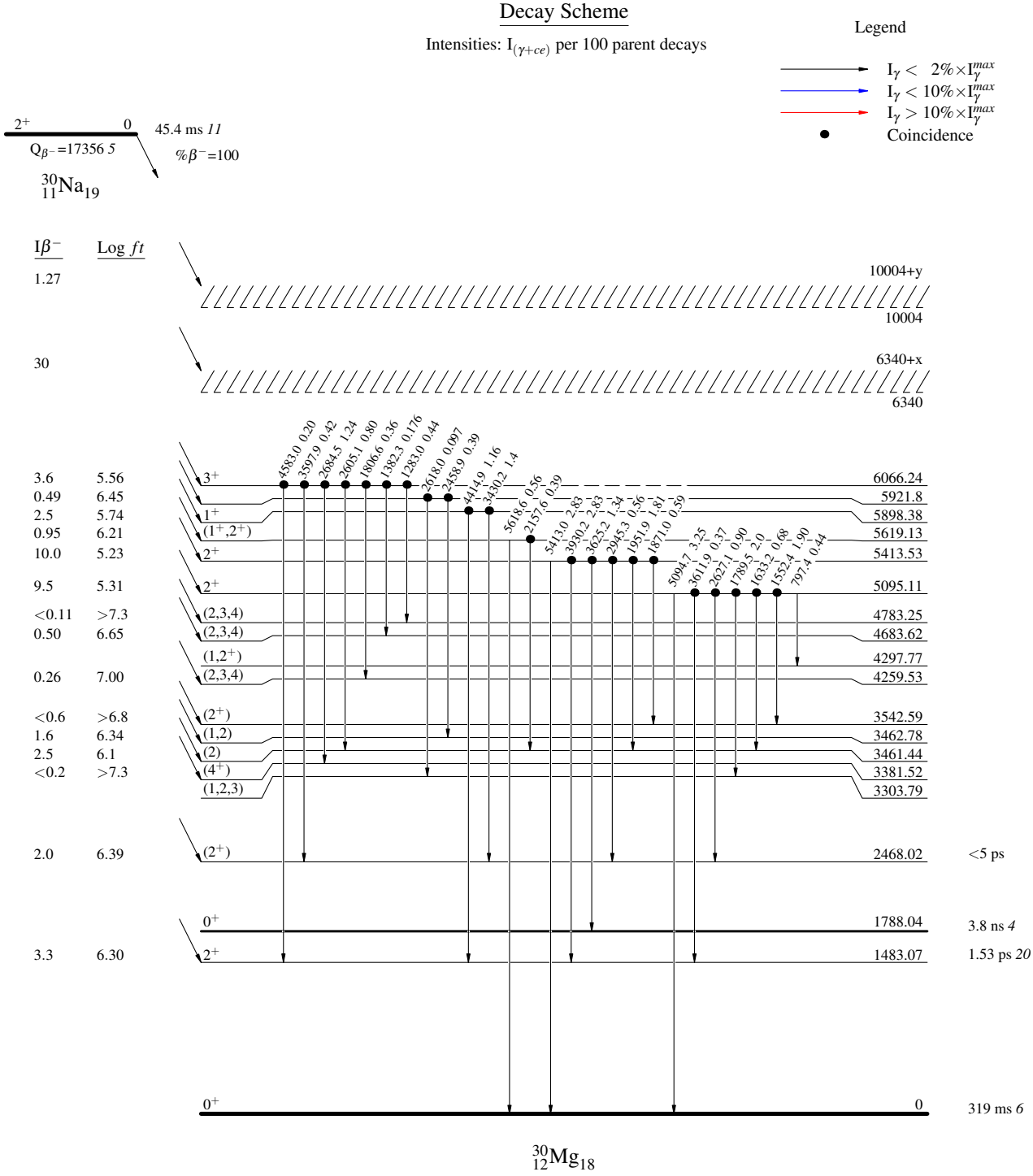
† From 2020Ni05, except where noted otherwise. For $\Delta E\gamma$, systematic uncertainty of 0.2 keV, as stated in the text, combined with the listed statistical uncertainty in Table II.
‡ From 1989Ba07.
# From 1989Ba07, not reported in 1984Gu19.
@ From 1984Gu19, not reported by others.
& Additional information 3.
[a] For absolute intensity per 100 decays, multiply by 0.464 *34*.
[b] Absolute intensity per 100 decays.
[x] γ ray not placed in level scheme.

$^{30}_{12}Mg_{18}$-7

^{30}Na β^- decay (45.4 ms) 2020Ni05,1989Ba07,1984Gu19

Decay Scheme

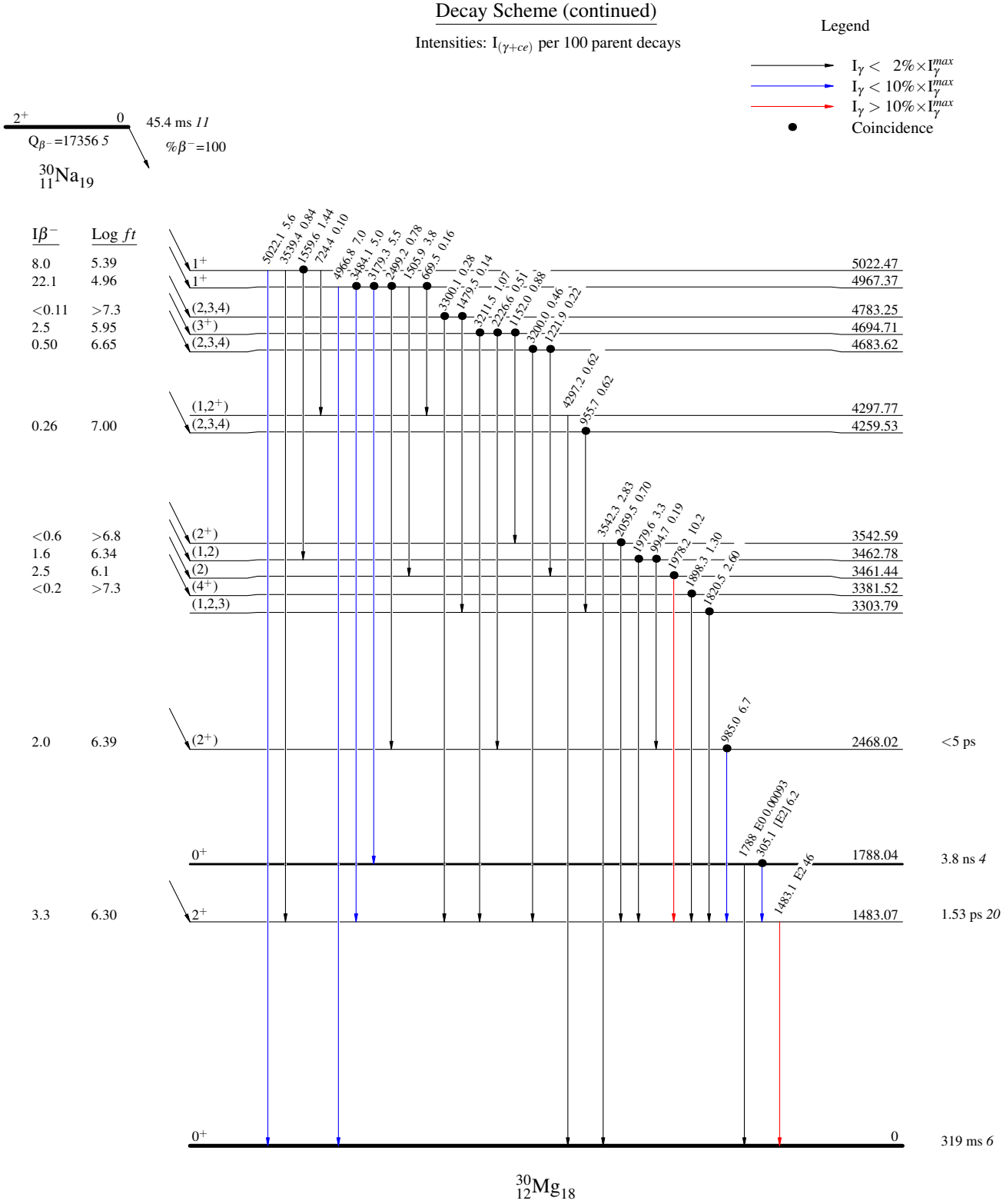
Intensities: $I_{(\gamma+ce)}$ per 100 parent decays



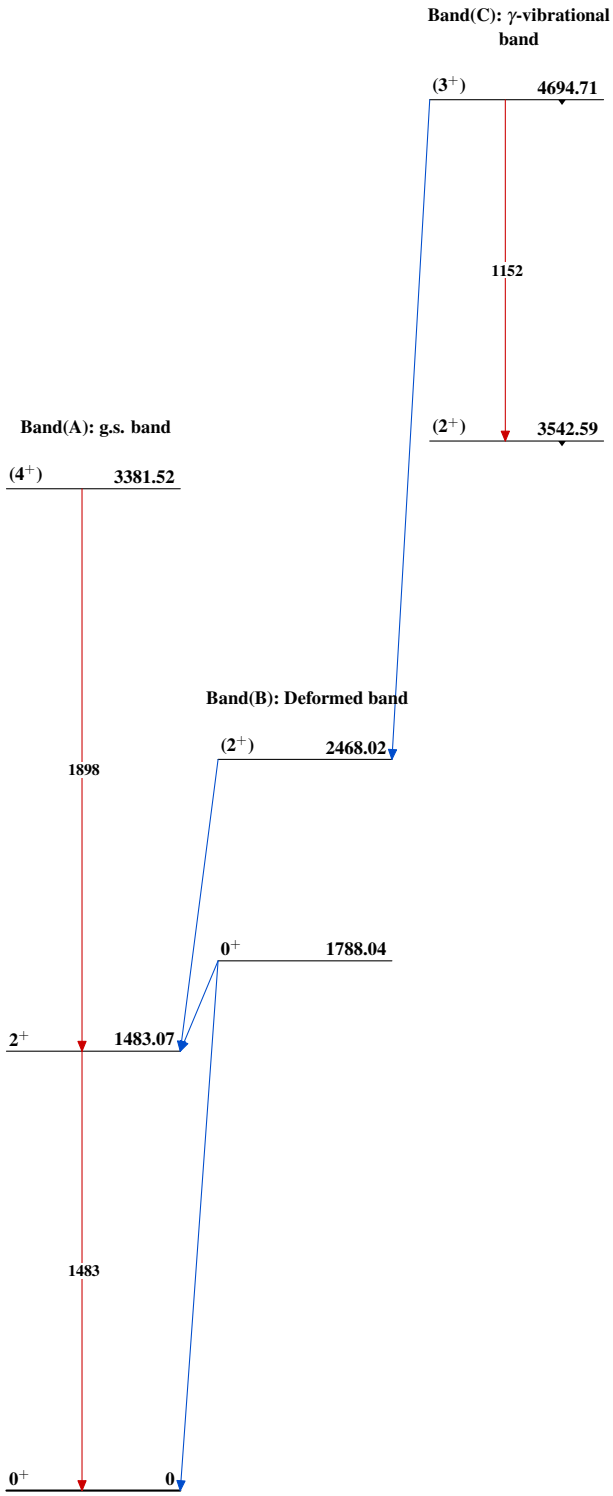
^{30}Na β^- decay (45.4 ms) 2020Ni05,1989Ba07,1984Gu19

Decay Scheme (continued)

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays



^{30}Na β^- decay (45.4 ms) 2020Ni05,1989Ba07,1984Gu19



$^{30}_{12}Mg_{18}$