^{56}Co - Comments on evaluation of decay data by C.M. Baglin and T. D. MacMahon

Evaluation Procedures

The *Limitation of Relative Statistical Weight* (LWM) [1985ZiZY] method, used almost exclusively for averaging numbers throughout this evaluation, provided a uniform approach for the analysis of discrepant data. In the few instances when an alternative technique was used, this fact has been noted. The uncertainty assigned in this evaluation to the recommended value is always greater than or equal to the smallest uncertainty in any of the experimental values used in the calculation.

1 Decay Scheme

^{56}Co decays 19.58 (11) % by positron (β^+) emission and 80.42 (11) % by electron capture (ε) to ^{56}Fe (Q(ε) = 4566.0 (20) keV (2003Au03)). Altogether, 46 γ rays de-exciting 15 nuclear levels in ^{56}Fe have been reported. Except for the strong 847-keV transition, emission of conversion electrons is very low and negligible compared to that of γ rays (photons) because of the low atomic number (Z=26) of the daughter nucleus (^{56}Fe) and the high energy (> 700 keV) of the most intense γ-ray transitions. Consequently, neither conversion coefficients (most of them < 2×10^{-4}) nor conversion electron energies and intensities have been tabulated in this evaluation. Pair production is also possible for transitions with $E_\gamma \geq 1022$ keV, but the internal-pair-formation coefficients (based on 1979Sc31) do not exceed 10^{-3} and are tabulated only for those transitions for which the coefficients exceed 4 x 10^{-4} or for which their omission would affect the deduced branching.

The evaluator has normalized the decay scheme assuming zero $\varepsilon+\beta^+$ feeding from the 4^+ ^{56}Co parent to the 0^+ ^{56}Fe ground state. Then Σ(I(γ+ce) to ground state) = 100%. Based on the decay scheme, only the 847γ, 2657γ and 3370γ feed the ground state. The 847 keV transition conversion coefficient is taken as $3.03(9) \times 10^{-4}$ (from Band *et al.*, 1976Ba63, assuming $\alpha = \alpha_K + 1.33\ \alpha_L$ and a 3% uncertainty). The normalization factor N is then given by:

$$N = 100 / [I(847\gamma)\ (1+\alpha(847\gamma)) + I(2657\gamma) + I(3370\gamma)]$$

$$= 100 / [100.0303\ (9) + 0.0195\ (20) + 0.0103\ (8)]$$

$$= 100 / [100.0601\ (23)]$$

$$= 0.999399\ (23)$$

With this normalization, I(847)(γ+ce) = 99.9702(23)%.

Electron-capture and β^+ transition probabilities to excited states in ^{56}Fe were determined from γ-ray transition intensity balance at each level and theoretical ε/β^+ ratios. It should be noted that the 2nd-forbidden transitions to the 2690 and 3370 levels, though weak, are probably overestimated since log *ft* values for these branches are significantly lower than expected from log *ft* systematics.

The evaluator has included level half-life data from the evaluation by Huo (1999Hu04) in the decay scheme drawing given here. The level energies shown in the drawing result from a least-squares adjustment of the γ-ray energies recommended in this evaluation.

2 Nuclear Data

The recommended value for the half-life of ^{56}Co is 77.236 (26) days, taken from the evaluation by Woods *et al.* (2004WoAA). This supersedes an earlier evaluation by two of these authors (2004Wo02) in which 77.20 (8) days (χ^2/ν = 0.9) was recommended. Measured values and their respective sources are:

Half-life	**Reference**	**Comments**
77.2 (8)	1954Bu58	
77.3 (3)	1957Wr37	
78.76 (12)	1972Em01	statistical outlier
78.4 (5)	1974Cr05	statistical outlier
77.12 (10)	1977An13	
77.12 (7)	1978La21	
77.30 (9)	1989Al24	
77.08 (8)	1989Le17	
77.28 (4)	1989Sc17	
77.29 (3)	1990Al29	
77.210 (28)	1992Fu02	
77.29 (4)	1992Fu02	

The weighted average of all data published from 1977 onwards is 77.245 (23) days ($\chi^2/\nu = 2.2$), where the uncertainty shown is the external error (the internal error is 0.015 days).

Q(ε) = 4566.0 (20) keV is adopted from 2003Au03.

2.1 β+ Transitions

The positron end-point energies, calculated from E_{β^+} = Q(ε) – E(lev) – 1022, are the evaluator's values deduced using Q(ε) = 4566.0 (20) keV (2003Au03) and level energies (E(lev)) from the decay scheme. Absolute β^+ emission probabilities are from γ-ray intensity balance at each nuclear level and theoretical $I_{\beta\iota}^{+}/\varepsilon_i$ ratios. Note that the latter may not be reliable for the 2nd-forbidden branches.

2.2 Electron Capture Transitions

ε-transition energies, calculated from E(ε) = Q(ε) – E(lev), are evaluator's values deduced using Q(ε) = 4566.0 (20) keV (2003Au03) and level energies (E(lev)) from the decay scheme. Absolute ε transition probabilities are from γ-ray intensity balance at each nuclear level and theoretical $I_{\beta\iota}^{+}/\varepsilon_i$ ratios. These sum to 80.42(11)%, implying I(β^+)=19.58(11)%. Fractional atomic shell electron-capture probabilities (P_K, P_L, P_M) are evaluator's values calculated using the EC-CAPTURE computer program [2] for the relevant nuclear level energies.

3 Atomic Data

Emission probabilities are evaluator's values calculated using the EMISSION program (Version 3.04) [3], atomic data from 1996Sc06, and the γ-ray emission probabilities recommended here. The K X-ray and K-Auger electron energies are taken from Schönfeld and Rodloff [5] and [4], respectively; L X-ray and L-Auger electron energies are from Larkins [6].

4 Photon Emissions

4.1 Energies

γ-ray energies shown in boldface in Table 1 are from 2000He14. These values are based on a revised energy scale that uses the new adjusted fundamental constants and wave lengths deduced from an updated value of the lattice spacing of Si crystals [Cohen and Taylor [1]]. Helmer *et al*. (2000He14) fitted the adjusted γ-ray energy measurements for ^{56}Co to a level scheme, and deduced recommended γ-ray energy values from level-energy differences. Less precise energies are from 1990Me15, 1989Al25 (one transition only) and 1980St20. The latter authors adopted energies from the literature for the strongest transitions (shown in square brackets in Table 1) and made the general statement that the uncertainties in the other transition energies range from 0.05 keV to 0.8 keV; the evaluator has, therefore, assigned uncertainties of 0.8 keV to the four energies adopted from this study. The uncertainties in the γ-ray energies given in this evaluation are statistical only, as reported by authors. See Table 1.

4.2 Emission Probabilities

a. Relative intensities

Relative emission probability measurements are given in Table 2, panels a); panels b) show the results of several different analyses of those data along with the intensities recommended in the present evaluation. In cases where the authors indicated an uncertainty in the relative intensity of the 847-keV reference line, that uncertainty was combined in quadrature with the statistical uncertainty for each of the other transitions prior to all analyses of the data.

The analysis of these data is complicated on account of two factors:

(i) Discrepant data sets. Of the approximately 770 data points, successive runs of the program LWEIGHT identify a total of 87 statistical outliers based on the Chauvenet criterion; this seems an unusually large fraction. Most outliers, though by no means all, arise from the earlier measurements.

(ii) The use by some authors of Ge detector efficiency calibration curves which are inadequate at the highest energies. This problem was first identified by McCallum and Coote (1975Mc07) and is discussed further by Baglin *et al.* in 2002Ba38.

One prescription for dealing with discrepant data is the limitation of relative statistical weight method proposed by Zijp (1985ZiZY) and incorporated in the program LWEIGHT. The program identifies a set of data as 'discrepant' whenever its reduced chi-squared value exceeds the critical reduced chi-squared value for the relevant number of data points. For those cases, it then increases the uncertainty for any datum whose statistical weight exceeds 50% until it no longer does so, then recalculates the weighted mean. If the weighted mean overlaps the unweighted mean, the weighted mean will be adopted. The uncertainty used is usually the internal uncertainty; however, the uncertainty will be expanded to include the most precise datum, if necessary, and the external uncertainty will be used if the internal uncertainty is less than the uncertainty in the most precise datum. Otherwise, the unweighted mean will be adopted; this does not seem to be a particularly useful number since it could so easily be skewed by the least reliable data.

Two additional techniques that might reasonably be applied to the analysis of these data are the Normalised Residuals (1991JaXX) and the Rajeval (1992Ra08) techniques. Both are iterative techniques which increase the uncertainties of any deviant data, but they use different prescriptions for identifying and adjusting the deviant data. The results of these analyses are also shown in Table 2.

Another logical approach would be to use the results from LWEIGHT after all statistical outliers have been eliminated from the dataset. Table 2 also gives the results from this analysis.

The second problem could be approached by considering data from only the eight experiments (2002MoZP, 2000Ra36, 1990Me15, 1980St20, 1978Ha53, 1977Ge12, 1974BoXX and 1971Si29) in which the detector efficiency has been *measured* (not extrapolated) up to at least the highest ^{56}Co transition energy (3611 keV). (Details of the efficiency calibrations for many measurements are sketchy at best, and some rely partially or totally on Monte Carlo calculations.) However, this approach greatly decreases the number of data points, so one should resort to this measure only at energies where significant problems are anticipated. The high precision data from 1971Ca14, based on a linear extrapolation to high energy of a log(efficiency) *versus* log(energy) plot, have received considerable scrutiny in the literature, and 2002Ba38 deduced a multiplicative correction factor ($F = 1.116 - 0.155\, E_\gamma + 0.0397 E_\gamma^2$, where E_γ is in MeV) to correct ^{66}Ga intensity data in 1971Ca14; this formula implies intensity correction factors of 0.98, 1.01 and 1.06, respectively, at E_γ = 2.5, 3.0 and 3.5 MeV. These factors apply equally to the ^{56}Co data from 1971Ca14 and to those from 1970Ph01 and 1974Ho25, all tied to the intensity scale in 1971Ca14. This situation suggests that data from only the eight selected references should be considered for $E_\gamma > 3000$ keV. However, although used only for $E_\gamma > 3000$ keV, the analysis of data from the selected references is shown in Table 2 for transitions of all energies, for the sake of completeness.

b. Absolute Intensities

Absolute emission probabilities are based on experimental results and decay-scheme normalization arguments as follows:

- $I_{ce}(847\gamma, E2)/I_{\gamma}(847\gamma) = 3.03\ (9) \times 10^{-4}$ (Theory (Band *et al.*, 1976Ba63), assuming $\alpha = \alpha_K + 1.33\ \alpha_L$ and 3% uncertainty).
- No $\varepsilon+\beta^+$ branch to ground state, so Σ(I(γ+ce) to ground state) = 100%.

The recommended absolute γ-ray emission probabilities are the relative values recommended in Table 2 multiplied by 0.999399 (23).

c. Annihilation radiation intensity

The 511-keV γ-ray intensity has not been experimentally determined but may be estimated from:

$I(\gamma^{\pm})$ = 2 × [100-I(ε) + I(pair production)]

= 2 × [19.58 (11) + 0.024]

= 39.21(22) %

4.3 Transition Multipolarities and Mixing Ratios

The transition multipolarities and mixing ratios have been taken directly from the evaluation by Huo (1999Hu04). Several additional transition multipolarities, deduced from the decay scheme, are shown enclosed by square brackets.

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Table 1. ^{56}Co Gamma-Ray Energies

2000He14	1990Me15	1989Al25	1980St20	Adopted
E_γ (keV)	E_γ (keV)	E_γ (keV)	E_γ (keV)[a]	E_γ (keV)
	263.41 (10)		263.34	263.41 (10)
	411.38 (8)		410.94	411.38 (8)
	486.54 (11)		485.2	486.54 (11)
			655.0 (8)[a]	655.0 (8)
			674.7 (8)[a]	674.7 (8)
733.5085 (23)	733.72 (15)		733.6	**733.5085 (23)**
787.7391 (23)	787.88 (7)		787.77	**787.7391 (23)**
846.7638 (19)	846.772 (8)		[846.764]	**846.7638 (19)**
		852.78 (5)		852.78 (5)
896.503 (7)	896.56 (20)		896.55	**896.503 (7)**
977.363 (4)	977.485 (60)		977.39	**977.363 (4)**
996.939 (5)	997.33 (16)		996.48	**996.939 (5)**
1037.8333 (24)	1037.840 (6)		[1037.844]	**1037.8333 (24)**
	1089.03 (24)		1089.31	1089.03 (24)
1140.356 (7)	1140.28 (10)		1140.52	**1140.356 (7)**
1159.933 (8)	1160.08 (16)		1160.0	**1159.933 (8)**
1175.0878 (22)	1175.102 (6)		[1175.099]	**1175.0878 (22)**
	1198.78 (20)		1198.77	1198.78 (20)
1238.2736(22)	1238.282 (7)		[1238.287]	**1238.2736(22)**
	1272.2 (6)		1272.20	1272.2 (6)
1335.380 (29)	1335.56 (8)		1335.56	**1335.380 (29)**
1360.196 (4)	1360.215 (12)		[1360.206]	**1360.196 (4)**
	1442.75 (8)		1442.65	1442.75 (8)
	1462.34 (12)		1462.28	1462.34 (12)
1640.450 (5)	1640.54 (13)		1640.38	**1640.450 (5)**
1771.327 (3)	1771.351 (16)		[1771.350]	**1771.327 (3)**
1810.726 (4)	1810.714 (35)		[1810.722]	**1810.726 (4)**
1963.703 (11)	1963.99 (6)		[1963.714]	**1963.703 (11)**
2015.176 (5)	2015.181 (16)		[2015.179]	**2015.176 (5)**
2034.752 (5)	2034.755 (15)		[2034.159]	**2034.752 (5)**
2113.092 (6)	2113.185 (115)		[2113.107]	**2113.092 (6)**
2212.898 (3)	2212.96 (15)		[2212.921]	**2212.898 (3)**
	2276.36 (16)		2276.09	2276.36 (16)
	2373.7 (4)		2373.71	2373.7 (4)
	2523.86 (20)		2523.0	2523.0 (8)[b]
2598.438 (4)	2598.458 (13)		[2598.460]	**2598.438 (4)**
			2657.4 (8)[a]	2657.4 (8)
3009.559 (4)	3009.591 (22)		[3009.596]	**3009.559 (4)**
3201.930 (11)	3201.962 (16)		[3201.954]	**3201.930 (11)**
3253.402 (5)	3253.416 (15)		[3253.417]	**3253.402 (5)**
3272.978 (6)	3272.990 (15)		[3272.998]	**3272.978 (6)**
	3369.69 (30)		3369.97	3369.69 (30)
3451.119 (4)	3451.152 (17)		[3451.154]	**3451.119 (4)**
	3547.93 (6)		3548.27	3547.93 (6)
	3600.49 (40)		3600.85	3600.7 (4)
			3611.8 (8)[a]	3611.8 (8)

[a] Authors took energies for the strongest lines from the literature (shown in square brackets) and stated that uncertainties varied from 0.05 to 0.8 keV for the others. The evaluator has conservatively assigned 0.8 keV to those lines whose energies are adopted in the present evaluation from this reference.

[b] The datum from 1980St20 is adopted in preference to the more precise datum from 1990Me15 because the latter value fits its level-scheme placement poorly and is almost 1 keV higher than the γ-ray energy of 2522.88 (6) adopted in an evaluation (1999Hu04) which included information from sources other than ^{56}Co ε decay.

Table 2: ^{56}Co Relative Gamma-Ray Emission Probabilities[@], a) Experimental Data

Ref./Eγ	263.4γ	411.4γ	486.5γ	655.0γ	674.7γ	733.5γ	787.7γ	846.8γ	852.8γ	896.5γ
65Pe18							1.04* (21)	100		
66Do07								100		
66Hu17								100		
66Sc01								100		
67Au01						0.10* (5)	0.4 (2)	100		
67Ba75								100		
68Sh07						0.13 (6)	0.2 (1)	100		
67Ch20							0.36 (5) (8)	100 (15) (0)		
69Ar04								100		
69Au09								100		
69Sc09							0.37 (4)	100		0.14* (4)
70Ph01	0.03 (1)		0.066 (6)			0.21 (4)	0.31 (6)	100		0.06 (1)
71Ca14	0.021 (4)	0.025 (5)	0.041 (7)			0.193 (3)	0.308 (8)	100		0.071 (4)
71Ge07								100		
71Ge08	0.05* (1)	0.024 (7)	0.050 (12)		0.03 (1)	0.18 (3)	0.28 (4)	100	0.04 (1)	0.08 (2)
71Si29[S]							0.21 (6)	100		
72Pe20[d]								100.0 (60) (0) 100.0 (56) (0) 100.0 (57) (0)		
74BoXX[S]								100		
74Ho25	0.020 (6)	0.025 (9)	0.07 (2)		0.03 (1)	0.165 (8)	0.29 (3)	100		0.062 (6)
75Ka06						0.219 (7)	0.311 (12)	100		0.089 (11)
77Ge12[S]								100 (1) (0)		
78Ha53[S]						0.143 (13)	0.34 (3)	100		0.077 (10)
80St20[S]	0.022 (4)	0.031* (4)	0.069 (7)	0.038 (8)	0.038 (7)	0.195 (14)	0.320 (7)	100		0.063 (6)
80Sh28	0.031[c] (9)	0.026 (8)	0.065 (11)		0.045 (20)	0.166 (12)	0.28 (1)	100		0.089 (13)
80Yo05			0.061 (10) (10)			0.193 (12) (12)	0.305 (13) (13)	100.0 (3) (0)		0.095 (18) (18)
82Gr10								100		
89Al25								100	0.050 (3)	
90Me15[S]	0.022 (4)	0.025 (5)	0.055 (5)			0.20 (1)	0.31 (1)	100		0.070 (5)
92ScZZ						0.190 (7) (7)	0.315 (10) (10)	100.00 (26) (0)		0.086 (20) (20)
00Ra36[S]								100		
02MoZP[S]								100.0 (2) (0)		

Table 2: ^{56}Co Relative Gamma-Ray Emission Probabilities[@]
b) Analysis

Eγ	263.4γ	411.4γ	486.5γ	655.0γ	674.7γ	733.5γ	787.7γ	846.8γ	852.8γ	896.5γ
All Data										
# data points, N	7	6	8	1	4	13	17	33	2	12
$\chi^2/(N-1)$	1.5	0.31	1.7	N/A	0.31	4.2[b]	2.0[b]	N/A	0.92	1.4
Iγ; UWM	0.028 (4)	0.0260 (10)	0.060 (4)	-	0.036 (4)	0.176 (9)	0.350 (45)	100	0.045 (5)	0.082 (6)
Iγ; WM	0.0234 (20)	0.0269 (23)	0.0583 (27)	-	0.035 (5)	0.1909 (22)	0.309 (3)	100	0.049 (3)	0.0704 (22)
Iγ; LWM	= WM	= WM	= WM	-	= WM	0.176 (17)[X]	0.309 (11)[X]	100	= WM	= WM
Iγ; Norm Res	0.0234 (20)	0.0269 (23)	0.0583 (27)	-	0.035 (5)	0.1905 (37)	0.310 (4)	100	0.049 (3)	0.0704 (22)
Iγ; Rajeval	0.0227 (20)	0.0269 (23)	0.0602 (29)	-	0.035 (5)	0.1914 (24)	0.311 (4)	100		0.0704 (22)
Statistical Outliers Excluded			N/A	N/A	N/A				N/A	
# data points, N	6	5	-	-	-	12	16	33	-	11
$\chi^2/(N-1)$	0.36	0.01	-	-	-	4.3[b]	1.4	N/A	-	1.3
UWM	0.0243 (20)	0.0250 (3)	-	-	-	0.182 (8)	0.307 (13)	100	-	0.077 (4)
WM	0.0223 (21)	0.0250 (28)	-	-	-	0.1911 (22)	0.309 (3)	100	-	0.0701 (22)
LWM	= WM	= WM	-	-	-	0.1909 (48)[e]	= WM	100	-	= WM
Selected Data										
# data points, N	2	2	2	1	2	3	4		0	3
$\chi^2/(N-1)$	0	0.88	2.7	N/A	0.43	6.6[b]	1.5	N/A	N/A	0.83
Iγ; UWM	0.022 (0)	0.028 (3)	0.062 (7)	-	0.034 (4)	0.179 (18)	0.295 (29)	100	-	0.070 (4)
Iγ; WM	0.022 (3)	0.029 (3)	0.060 (4)	-	0.035 (6)	0.183 (7)	0.317 (6)	100	-	0.068 (4)
Iγ; LWM	= WM	= WM	= WM	-	= WM	0.183 (18)[e]	= WM	100	-	= WM
Iγ; Norm Res										
Iγ; Rajeval										
Adopted Iγ	0.0234 (20)	0.0269 (23)	0.058 (3)	0.038[a] (8)	0.035 (5)	0.191 (4)	0.310 (4)	100	0.049 (3)	0.0704 (22)
Source	All; WM	All; WM	All; WM	1980St220	All; WM	All; NR	All; NR	N/A	All; WM	All; WM

Table 2: ^{56}Co Relative Gamma-Ray Emission Probabilities (continued)[@], a) Experimental Data

Ref./Eγ	977.4γ	996.9γ	1037.8γ	1089.0γ	1140.4γ	1159.9γ	1175.1γ	1198.8γ	1238.3	1272.2γ
65Pe18	1.73* (35)		14.1 (15)				2.1 (6)		66.8 (40)	
66Do07			12.4 (5)						71.2 (26)	
66Hu17			14.5 (15)				2.8* (5)		70.5 (70)	
66Sc01			14.0 (20)				1.4* (2)		66.3 (60)	
67Au01	1.36 (36)		12.8 (9)				2.4 (2)		69.5 (35)	
67Ba75	1.62* (10)		13.7 (8)				2.03* (14)		72.1 (50)	
68Sh07	1.01* (30)		12.1* (8)				2.2 (1)		70.2 (25)	
67Ch20	1.50* (23) (32)		14.0 (21) (30)		0.170 (26) (36)		1.60* (24) (34)		64 (10) (14)	
69Ar04	1.1 (1)		9.6*[†] (6)				1.9* (2)		69.6 (35)	
69Au09			13.08 (35)				1.73* (13)		68.3 (14)	
69Sc09					0.17 (3)					
70Ph01	1.35 (5)		14.0 (7)		0.24* (4)	0.11 (2)	2.25 (5)		68.5 (12)	
71Ca14	1.448 (14)	0.112 (6)	14.24 (14)	0.048 (9)	0.142 (9)	0.100 (9)	2.300 (25)	0.050 (7)	67.64 (68)	0.019 (1)
71Ge07			12.9 (5)				2.26 (23)		67.8 (15)	
71Ge08	1.42 (14)	0.13 (3)	14.4 (9)	0.04 (1)	0.16 (3)	0.11 (2)	2.29 (22)	0.06 (2)	69.6 (35)	0.024 (7)
71Si29[S]	1.21* (6)		12.44 (31)				2.11 (5)			
72Pe20[d]			13.45 (190) (206) 13.03 (172) (187) 12.72 (153) (169)				1.99* (27) (30) 2.18 (34) (36) 1.93* (25) (27)		70.9 (77) (88) 68.2 (72) (81) 66.9 (75) (84)	
74BoXX[S]			13.7 (6)				2.3 (1)		66.2 (10)	
74Ho25	1.37 (4)	0.17 (5)		0.07 (2)	0.13 (2)	0.078 (7)	2.25 (11)	0.028 (9)		0.022 (3)
75Ka06	1.386 (15)		13.922 (116)		0.107 (3)	0.095 (6)	2.180 (24)		66.37 (74)	
77Ge12[S]	1.426 (15) (21)		14.04 (14) (20)				2.28 (2) (3)		66.4 (7) (10)	
78Ha53[S]	1.38 (4)	0.170 (14)	13.5 (2)	0.06 (2)	0.117 (13)	0.08 (1)	2.11 (10)	0.044 (8)	65.1 (4)	0.035* (4)
80St20[S]	1.41 (2)	0.092 (14)	14.11 (19)	0.050 (7)	0.125 (6)	0.074 (8)	2.30 (32)	0.04 (1)	68.47 (87)	0.038* (6)
80Sh28	1.38 (3)	0.11 (1)	14.06 (28)	0.075 (9)	0.11 (1)	0.079 (9)	2.22 (5)	0.035 (10)	67.59 (131)	0.022 (8)
80Yo05	1.435 (16) (16)	0.129 (14) (14)	14.16 (5) (7)	0.05 (3) (3)	0.131 (21) (21)	0.095 (14) (14)	2.241 (12) (14)	0.051 (9) (9)	66.06 (21) (29)	0.025 (8) (8)
82Gr10			13.85 (35)						65.8 (16)	
89Al25										
90Me15[S]	1.440 (15)	0.112 (6)	14.0 (1)	0.05 (1)	0.15 (1)	0.10 (1)	2.28 (2)	0.05 (1)	67.6 (4)	0.020 (2)
92ScZZ	1.450 (15) (15)		14.18 (13) (13)		0.137 (5) (5)		2.289 (21) (21)		66.96 (60) (60)	0.024 (10) (10)
00Ra36[S]			14.11 (22)				2.25 (4)		66.6 (10)	
02MoZP[S]	1.424 (6) (7)		14.07 (4) (5)				2.252 (9) (10)		66.20 (11) (17)	

Table 2: ^{56}Co Relative Gamma-Ray Emission Probabilities (continued)[@]
b) Analysis

Eγ	977.4γ	996.9γ	1037.8γ	1089.0γ	1140.4γ	1159.9γ	1175.1γ	1198.8γ	1238.3γ	1272.2γ
All Data:										
# data points, N	20	8	30	8	13	10	29	8	29	9
χ^2/(N-1)	2.7[b]	3.0[b]	4.5[b]	1.3	5.3[b]	1.6	2.8[b]	0.92	1.8[b]	3.1[b]
Iγ; UWM	1.39 (3)	0.128 (10)	13.51 (18)	0.055 (4)	0.145 (10)	0.092 (4)	2.15 (5)	0.045 (4)	67.84 (36)	0.0254 (22)
Iγ; WM	1.423 (4)	0.116 (3)	14.018 (31)	0.054 (4)	0.1204 (21)	0.088 (3)	2.249 (6)	0.044 (3)	66.42 (12)	0.0206 (8)
Iγ; LWM	1.423 (7)[e]	0.116 (6)[e]	13.51 (56)[X]	= WM	0.145 (38)[X]	= WM	2.15 (10)[X]	= WM	67.8 (16)[X]	0.025 (6)[X]
Iγ; Norm Res	1.423 (7)	0.114 (4)	14.04 (5)	0.054 (4)	0.131 (4)	0.088 (3)	2.250 (9)	0.044 (3)	66.45 (16)	0.0205 (9)
Iγ; Rajeval	1.425 (5)	0.113 (4)	14.055 (31)	0.051 (4)	0.133 (3)	0.088 (3)	2.254 (6)	0.044 (3)	66.44 (12)	0.0199 (8)
Statistical Outliers Excluded:		N/A		N/A		N/A		N/A	N/A	
# data points, N	14	-	28	-	11	-	21	-	-	7
χ^2/(N-1)	1.7	-	2.6[b]	-	4.0[b]	-	1.6	-	-	0.36
UWM	1.406 (9)	-	13.70 (11)	-	0.137 (7)	-	2.240 (16)	-	-	0.0223 (8)
WM	1.424 (4)	-	14.03 (3)	-	0.1164 (23)	-	2.252 (6)	-	-	0.0196 (8)
LWM	= WM	-	13.70 (37)[X]	-	0.137 (30)[X]	-	= WM	-	-	= WM
Selected Data:										
# data points, N	6	3	8	3	3	3	8	3	7	3
χ^2/(N-1)	3.1[b]	9.1[b]	4.9[b]	0.12	2.8	2.1	1.9	0.25	4.4[b]	8.5[b]
Iγ; UWM	1.382 (35)	0.125 (23)	13.75 (20)	0.053 (3)	0.131 (10)	0.085 (8)	2.24 (3)	0.045 (3)	66.65 (41)	0.031 (6)
Iγ; WM	1.422 (6)	0.117 (5)	14.01 ((4)	0.0508 (55)	0.130 (5)	0.083 (5)	2.254 (8)	0.045 (5)	66.31 (14)	0.0242 (17)
Iγ; LWM	1.422 (12)[e]	0.122 (21)[e]	13.98 (11)[e]	= WM	= WM	= WM	= WM	= WM	66.36 (36)[e]	0.028 (8)[X]
Iγ; Norm Res										
Iγ; Rajeval										
Adopted Iγ	1.423 (7)	0.116 (6)	14.04 (5)	0.054 (4)	0.132 (4)	0.088 (3)	2.250 (9)	0.044 (3)	66.45 (16)	0.0202 (8)
Source	All; LWM	All; LWM	All; NR	All; WM	All; NR-Raj	All; WM	All; NR	All; WM	All; NR	All; NR-Raj

Table 2: ^{56}Co Relative Gamma-Ray Emission Probabilities (continued)[@], Experimental Data

Ref./Eγ	1335.4γ	1360.2γ	1442.8γ	1462.3γ	1640.5γ	1771.3γ	1810.7γ	1963.7γ	2015.2γ	2034.8γ
65Pe18		4.0 (8)				16.2 (14)		0.75 (27)	4.1* (12)	9.2* (17)
66Do07		3.8 (3)				15.6 (13)			3.8* (7)	7.8 (10)
66Hu17		4.5 (7)				12.5* (13)	0.70* (14)	0.80 (15)	3.7* (6)	8.3 (15)
66Sc01		3.8 (4)				13.5* (14)		1.10* (15)	3.5* (4)	6.5* (8)
67Au01		4.5 (3)				16.1 (8)	0.4* (2)	0.59 (9)	2.7 (2)	7.4 (6)
67Ba75		4.8* (3)				16.9 (10)	1.3* (6)	1.1* (2)	2.93 (30)	7.37 (50)
68Sh07		4.2 (4)				16.7 (10)	0.5* (3)	0.63 (20)	2.9 (4)	7.7 (5)
67Ch20		4.0 (6) (8)				14.0* (21) (30)		0.68 (10) (14)	2.6 (4) (6)	6.6* (10) (14)
69Ar04		4.6 (3)				16.2 (10)		0.9* (2)	3.9* (3)	8.2 (5)
69Au09		4.15 (12)				14.95 (40)			2.78 (14)	7.56 (21)
69Sc09	0.12 (2)		0.23* (3)	0.12* (3)			0.65 (6)	0.63 (5)		
70Ph01	0.15* (2)	4.37 (13)	0.20 (2)	0.08 (2)	0.05 (2)	16.0 (5)	0.62 (6)	0.74 (3)	3.13 (10)	8.1 (2)
71Ca14	0.123 (3)	4.340 (45)	0.200 (8)	0.077 (1)	0.065 (9)	15.78 (16)	0.641 (8)	0.721 (15)	3.095 (31)	7.95 (8)
71Ge07		4.16 (21)				16.5 (8)			2.99 (20)	8.2 (6)
71Ge08	0.11* (2)	3.96 (40)	0.14* (2)	<0.02	0.07 (1)	14.9 (9)	0.55* (6)	0.67 (7)	2.83 (30)	7.7 (6)
71Si29[S]		4.42 (8)					0.47* (6)	0.58 (5)	2.60 (12)	7.0* (3)
72Pe20[d]		4.08 (51) (57) 4.4 (6) (6) 5.30* (78) (84)				15.36 (174) (197) 15.98 (180) (201) 14.55 (166) (186)			2.88 (42) (45) 2.28* (27) (30) 2.59 (45) (47)	6.25* (88) (96) 6.8* (8) (9) 6.85* (80) (89)
74BoXX[S]		4.4 (1)				15.9 (3)			3.1 (1)	7.8 (1)
74Ho25	0.120 (12)	4.35 (12)	0.177 (9)	0.065 (12)	0.063 (6)		0.63 (3)	0.71 (3)		
75Ka06	0.120 (3)	4.189 (52)	0.172 (4)	0.078 (3)	0.062 (3)	15.369 (241)	0.665 (23)	0.667 (21)	3.025 (72)	7.694 (146)
77Ge12[S]		4.24 (4) (6)				15.65 (16) (22)	0.650 (7) (10)	0.724 (8) (11)	3.09 (5) (6)	7.95 (12) (14)
78Ha53[S]	0.12 (2)	4.24 (15)	0.195 (10)		0.05 (1)	15.26 (15)	0.59* (3)	0.70 (2)	2.97 (3)	7.64 (6)
80St20[S]	0.128 (6)	4.32 (6)	0.173 (7)	0.091 (13)	0.062 (7)	15.5 (4)	0.629 (13)	0.719 (15)	3.182 (66)	8.14 (17)
80Sh28	0.124 (10)	4.29 (8)	0.182 (11)	0.086 (3)	0.055 (9)	15.61 (30)	0.62 (2)	0.71 (2)	2.95 (6)	7.74 (2)
80Yo05	0.130 (6) (6)	4.265 (17) (21)	0.172 (7) (7)	0.084 (6) (6)	0.070 (11) (11)	15.49 (5) (7)	0.657 (23) (23)	0.707 (11) (11)	3.026 (14) (17)	7.766 (28) (36)
82Gr10		4.27 (15)				15.11 (38)			2.97 (11)	7.60 (19)
89Al25										
90Me15[S]	0.125 (5)	4.33 (4)	0.20 (1)	0.077 (5)	0.06 (1)	15.70 (15)	0.64 (1)	0.720 (15)	3.08 (3)	7.89 (7)
92ScZZ	0.118 (6) (6)	4.29 (4) (4)	0.185 (7) (7)	0.065 (8) (8)	0.072 (12) (12)	15.48 (14) (15)	0.638 (8) (8)	0.724 (10) (10)	3.04 (5)(5)	7.90 (13) (13)
00Ra36[S]		4.23 (7)				15.42 (25)			3.03 (5)	7.835 (120)
02MoZP[S]		4.22 (15) (15)				15.24 (8) (9)	0.641 (5) (5)	0.698 (3) (3)	2.976 (14) (15)	7.69 (3) (3)

Table 2: ^{56}Co Relative Gamma-Ray Emission Probabilities (continued)[@]
a) Analysis

Eγ	1335.4γ	1360.2γ	1442.8γ	1462.3γ	1640.5γ	1771.3γ	1810.7γ	1963.7γ	2015.2γ	2034.8γ
All Data										
# data points, N	12	31	12	10	11	29	19	23	30	30
χ^2/(N-1)	0.57	0.90	2.5[b]	1.8	0.44	1.3	1.2	1.9[b]	2.5[b]	1.7
Iγ; UWM	0.124 (3)	4.29 (5)	0.186 (6)	0.082 (5)	0.0617 (23)	15.43 (17)	0.64 (4)	0.738 (27)	3.06 (7)	7.64 (11)
Iγ; WM	0.1229 (16)	4.283 (13)	0.1797 (23)	0.0779 (9)	0.0621 (21)	15.46 (4)	0.639 (3)	0.7030 (25)	3.015 (9)	7.746 (13)
Iγ; LWM	= WM	= WM	0.180 (8)[X]	= WM	= WM	= WM	= WM	0.7060 (42)[e]	3.015 (39)[X]	=WM
Iγ; Norm Res	0.1229 (16)	4.283 (13)	0.1797 (36)	0.0779 (9)	0.0621 (21)	15.46 (4)	0.639 (3)	0.7038 (37)	3.019 (14)	7.746 (18)
Iγ; Rajeval	0.1229 (16)	4.283 (13)	0.1792 (25)	0.0774 (9)	0.0621 (21)	15.49 (4)	0.640 (3)	0.7094 (37)	3.025 (10)	7.744 (14)
Statistical Outliers Excluded					N/A					
# data points, N	10	29	10	9	-	26	12	20	24	23
χ^2/(N-1)	0.45	0.80	2.3	1.7	-	1.2	0.43	1.6	2.3[b]	1.6
UWM	0.1228 (12)	4.24 (4)	0.186 (4)	0.078 (3)	-	15.67 (11)	0.640 (4)	0.694 (12)	2.94 (4)	7.82 (5)
WM	0.1228 (16)	4.282 (13)	0.1799 (23)	0.0779 (9)	-	15.47 (4)	0.641 (3)	0.7028 (25)	3.014 (9)	7.748 (14)
LWM	= WM	= WM	= WM	= WM	-	= WM	= WM	= WM	2.94 (4)[X]	= WM
Selected Data										
# data points, N	3	8	3	2	3	7	6	6	8	8
χ^2/(N-1)	0.12	0.89	3.1	1.0	0.50	2.0	115[b]	2.9	4.7[b]	3.5[b]
Iγ; UWM	0.1243 (23)	4.300 (28)	0.189 (8)	0.084 (7)	0.057 (4)	15.52 (9)	0.60 (3)	0.690 (22)	3.00 (6)	7.74 (12)
Iγ; WM	0.126 (4)	4.309 (24)	0.185 (5)	0.079 (5)	0.059 (5)	15.40 (6)	0.590 (3)	0.7008 (28)	3.001 (11)	7.727 (23)
Iγ; LWM	= WM	= WM	= WM	= WM	= WM	= WM	0.59 (5)[X]	= WM	3.006 (30)[X]	7.736 (48)[e]
Iγ; Norm Res								0.701 (5)	2.999 (22)	7.727 (44)
Iγ; Rajeval								0.713 (6)	2.997 (14)	7.713 (24)
Adopted Iγ	0.1229 (16)	4.283 (13)	0.180 (4)	0.0779 (9)	0.0621 (21)	15.46 (4)	0.639 (3)	0.706 (4)	3.019 (14)	7.746 (13)
Source	All; WM	All; WM	All; NR	All; WM	All; WM	All; WM	All; WM	All; LWM	All; NR	All; WM

Table 2: ^{56}Co Relative Gamma-Ray Emission Probabilities (continued)[@] Experimental Data

Ref./Eγ	2113.1γ	2212.9γ	2276.4γ	2373.7γ	2523.0γ	2598.4γ	2657.4γ	3009.6γ
65Pe18						17.4 (15)		1.3* (4)
66Do07						16.0* (27)		1.9* (8)
66Hu17	0.40 (9)	0.43 (9)	0.12 (3)	0.15* (3)	<0.03	20.0* (20)		1.25* (25)
66Sc01						17.4 (17)		1.5* (2)
67Au01	0.29 (5)					17.3 (9)		0.9 (2)
67Ba75	0.4 (1)	0.4 (1)				15.0* (13)		0.8 (3)
68Sh07	0.32 (15)	0.20*[†] (2)				17.0 (6)		1.0 (1)
67Ch20	0.56* (8) (12)	0.60* (9) (13)				14.0* (21) (30)		0.60* (9) (13)
69Ar04	0.3 (1)					18.7* (11)		0.9 (5)
69Au09						16.55 (44)		
69Sc09	0.32 (4)	0.46* (5)	0.14 (2)	0.11 (2)	0.09 (3)			
70Ph01	0.39 (3)	0.40 (3)	0.15 (2)	0.12 (2)	0.054 (15)	17.2 (4)		0.93 (6)
71Ca14	0.387 (4)	0.377 (10)	0.106 (5)	0.055 (12)	0.060 (5)	16.85 (17)		1.010 (11)
71Ge07						18.0* (9)		
71Ge08	0.26* (3)	0.28* (3)	0.10 (2)	0.08 (2)	0.07 (2)	16.5 (10)	~0.02	0.92 (10)
71Si29[S]	0.34 (4)	0.30* (6)						1.55* (12)
72Pe20[d]						15.65* (204) (224) 17.3 (22) (24) 14.44* (175) (193)		
74BoXX[S]						17.3 (4)		1.0 (2)
74Ho25	0.37 (2)	0.36 (2)	0.128 (8)	0.059 (12)	0.044 (10)		0.016 (5)	0.98 (9)
75Ka06	0.0.375 (17)	0.387 (18)	0.146 (7)			16.64 (22)		0.922 (29)
77Ge12[S]	0.387 (8) (9)	0.406 (9) (10)				17.34 (26) (31)		1.06 (3) (3)
78Ha53[S]	0.34 (2)	0.39 (2)	0.15 (2)	0.050 (6)	0.084 (9)	17.19 (15)	0.029 (4)	1.05 (3)
80St20[S]	0.375 (14)	0.42 (2)	0.117 (9)	0.097 (12)	0.079 (11)	17.40 (38)	<0.05	0.84 (4)
80Sh28	0.35 (1)	0.35 (1)	0.115 (10)	0.079 (10)	0.14*[†] (1)	16.41 (33)	0.015 (3)	1.02 (2)
80Yo05	0.363 (7) (7)	0.389 (8) (8)	0.124 (7) (7)	0.083 (11) (11)	0.068 (11) (11)	16.96 (6) (8)	0.021 (6) (6)	
82Gr10								
89Al25								
90Me15[S]	0.385 (5)	0.35 (1)	0.110 (5)	0.08 (1)	0.060 (5)	17.29 (15)		1.05 (1)
92ScZZ	0.376 (10) (10)	0.395 (14) (14)	0.128 (19) (19)	0.082 (22) (22)		17.26 (28) (28)		1.16 (3) (3)
00Ra36[S]						17.1 (3)		
02MoZP[S]	0.372 (4) (4)	0.388 (4) (4)				16.82 (7) (8)		1.033 (11) (11)

Table 2: ^{56}Co Relative Gamma-Ray Emission Probabilities (continued)[@]
a) Analysis

Eγ	2113.1γ	2212.9γ	2276.4γ	2373.7γ	2523.0γ	2598.4γ	2657.4γ	3009.6γ
All Data								
# data points, N	21	19	13	12	10	28	4	23
χ^2/(N-1)	2.5[b]	7.6[b]	2.8[b]	3.6[b]	7.6[b]	1.3	2.8	4.9[b]
Iγ; UWM	0.365 (13)	0.383 (18)	0.126 (5)	0.087 (8)	0.075 (8)	16.89 (22)	0.020 (3)	1.07 (6)
Iγ; WM	0.3764 (21)	0.3795 (27)	0.1192 (24)	0.071 (3)	0.0687 (27)	16.97 (4)	0.0195 (20)	1.029 (5)
Iγ; LWM	0.376 (11)[X]	0.380 (8)[X]	0.119 (13)[X]	0.087 (37)[X]	0.069 (9)[X]	= WM	= WM	1.029 (21)[X]
Iγ; Norm Res	0.3761 (31)	0.385 (5)	0.1179 (36)	0.077 (6)	0.064 (4)	16.97 (4)	0.0184 (22)	1.030 (9)
Iγ; Rajeval	0.3756 (22)	0.387 (3)	0.1187 (28)	0.079 (4)	0.062 (3)	16.96 (4)	0.0168 (23)	1.029 (6)
Statistical Outliers Excluded			N/A				N/A	
# data points, N	19	14	-	11	9	20	-	17
χ^2/(N-1)	1.9	2.8[b]	-	3.3[b]	1.7	1.2	-	4.4[b]
UWM	0.360 (8)	0.389 (6)	-	0.081 (7)	0.068 (5)	17.06 (7)	-	0.975 (22)
WM	0.3769 (21)	0.3835 (27)	-	0.070 (3)	0.0631 (28)	16.96 (4)	-	1.028 (5)
LWM	= WM	0.384 (5)[e]	-	0.070 (20)[X]	= WM	= WM	-	0.975 (75)[X]
Selected Data								
# data points, N	6	6	3	3	3	7	1	7
χ^2/(N-1)	1.9	4.4[b]	2.0	7.8[b]	3.4	2.2	N/A	7.5[b]
Iγ; UWM	0.367 (9)	0.376 (18)	0.126 (12)	0.076 (14)	0.074 (7)	17.21 (7)	0.029 (4)	1.08 (8)
Iγ; WM	0.3770 (29)	0.386 (3)	0.113 (4)	0.064 (5)	0.067 (4)	17.01 (6)	-	1.039 (7)
Iγ; LWM	= WM	0.385 (9)[e]	= WM	0.068 (18)[X]	= WM	= WM	-	1.039 (19)[e]
Iγ; Norm Res	0.3770 (29)	0.389 (6)	0.113 (4)	0.080 (7)	0.072 (5)	17.13 (8)	-	1.043 (11)
Iγ; Rajeval	0.3773 (35)	0.390 (4)	0.112 (4)	0.082 (8)	0.080 (7)	17.20 (8)	-	1.043 (7)
Adopted Iγ	0.376 (3)	0.385 (5)	0.118 (4)	0.078 (6)	0.063 (4)	16.97 (4)	0.0195 (20)	1.039(19)
Source	All; NR	All; NR	All; NR	All; NR-Raj	All; NR-Raj	All; WM	All; WM	Sel; LWM

Table 2: ^{56}Co Relative Gamma-Ray Emission Probabilities (continued)$^{@}$, Experimental Data

Ref./Eγ	3201.9γ	3253.4γ	3273.0γ	3369.7γ	3451.1γ	3547.9γ	3600.7γ	3611.8γ
65Pe18	3.2 (5)	8.5 (6)	1.5 (4)		0.95 (15)			
66Do07	2.9 (11)	5.8* (22)	1.2 (5)		0.7 (3)	0.2 (1)		
66Hu17	3.80* (45)	9.2* (9)	2.1 (4)		1.1 (2)	0.16 (3)	0.010 (5)	<0.005
66Sc01	3.4 (4)	8.3 (8)	1.9 (3)		0.7 (1)	0.21 (3)		
67Au01	3.4 (2)	7.8 (4)	1.5 (3)		0.87 (9)	0.15 (3)		
67Ba75	2.9 (3)	6.6 (6)	1.35 (20)		0.63* (15)	0.11* (5)		
68Sh07	2.8 (4)	7.3 (5)	1.5 (4)		0.83 (10)	0.15 (5)	0.02 (1)	
67Ch20	2.9 (4) (6)	7.2 (11) (15)	1.60 (24) (34)		0.72 (11) (15)	0.20 (3) (4)		
69Ar04	3.0 (2)	7.1 (4)	1.3 (1)		0.8 (1)	0.1* (1)		
69Au09	3.03 (14)	7.35 (21)	1.72 (13)		0.85 (7)			
69Sc09							0.024* (4)	0.007 (3)
70Ph01	3.10 (11)	7.5 (2)	1.72 (5)		0.89 (3)	0.18 (1)	0.014 (4)	0.011 (3)
71Ca14	3.03 (3)	7.390 (75)	1.755 (18)	0.011 (2)	0.875 (9)	0.178 (3)	0.015 (1)	0.0065 (10)
71Ge07	3.20 (35)	7.7 (9)	1.71 (25)		0.93 (20)	0.2 (1)		
71Ge08	2.81 (28)	7.0 (6)	1.69 (17)	0.015 (3)	0.82 (1)	0.15 (2)	0.014 (3)	0.007 (2)
71Si29^{S}			1.71 (9)		0.94 (2)	0.20 (3)		
72Pe20^{d}	2.86 (34) (38) 3.03 (36) (40) 2.55* (33) (36)	6.98 (86) (96) 7.4 (8) (9) 6.52 (78) (86)	- 1.57 (21) (23) 1.25 (20) (21)		0.98 (24) (25) 1.03 (14) (15) 0.84 (13) (14)			
74BoXX^{S}	3.2 (1)	8.2 (4)	1.9 (1)		1.00 (4)	0.20 (2)		
74Ho25				0.008 (2)	0.89 (4)	0.178 (9)	0.016 (2)	0.008 (2)
75Ka06	3.067 (157)	7.45 (43)	1.697 (103)		0.936 (84)	0.164 (18)		
77Ge12^{S}	3.18 (10) (10)	7.79 (24) (25)	1.85 (6) (6)		0.93 (3) (3)	0.190 (6) (6)	0.0165 (7) (7)	0.0085 (4) (4)
78Ha53^{S}	3.24 (3)	7.97 (11)	1.84 (3)	0.010 (1)	0.95 (2)	0.196 (5)	0.012 (3)	0.005 (2)
80St20^{S}	3.03 (7)	7.60 (15)	1.815 (36)	0.011 (2)	0.90 (2)	0.196 (6)	0.015 (2)	0.010 (2)
80Sh28	3.04 (6)	7.52 (15)	1.77 (4)	0.007 (2)	0.90 (2)	0.19 (5)	0.015 (3)	0.007 (2)
80Yo05								
82Gr10								
89Al25								
90Me15^{S}	3.24 (3)	7.937 (65)	1.89 (2)	0.011 (2)	0.954 (10)	0.198 (5)	0.018 (1)	
92ScZZ	3.32 (7) (7)	8.13 (17) (17)	1.93 (4) (4)		0.973 (20) (20)	0.200 (5) (5)		
00Ra36^{S}	3.16 (6)	7.815 (160)	1.84 (4)		0.93 (3)	0.19 (1)		
02MoZP^{S}	3.196 (17) (18)	7.85 (4) (4)	1.854 (12) (13)		0.94 (1) (1)	0.196 (2) (2)		

Table 2: ^{56}Co Relative Gamma-Ray Emission Probabilities (continued)[@], Analysis

Eγ	3201.9γ	3253.4γ	3273.0γ	3369.7γ	3451.1γ	3547.9γ	3600.7γ	3611.8γ
All Data								
# data points, N	27	27	27	7	29	24	12	9
χ^2/(N-1)	2.4[b]	2.8[b]	3.7[b]	1.1	5.8[b]	2.2[b]	1.2	1.1
Iγ; UWM	3.10 (5)	7.55 (13)	1.68 (4)	0.0104 (10)	`0.888 (19)	0.179 (6)	0.0158 (11)	0.0078 (6)
Iγ; WM	3.172 (11)	7.776 (27)	1.826 (8)	0.0100 (7)	0.905 (4)	0.1914 (13)	0.0162 (4)	0.0081 (3)
Iγ; LWM	3.10 (10)[X]	7.55 (30)[X]	1.68 (17)[X]	= WM	0.905 (30)[X]	0.179 (17)[X]	= WM	= WM
Iγ; Norm Res	3.188 (16)	7.82 (4)	1.838 (13)	0.0100 (7)	0.931 (7)	0.1934 (14)	0.0162 (4)	0.0081 (3)
Iγ; Rajeval	3.194 (12)	7.825 (28)	1.837 (9)	0.0100 (7)	0.932 (5)	0.1939 (14)	0.0162 (5)	0.0080 (4)
Statistical Outliers Excluded			N/A	N/A				N/A
# data points, N	25	25	-	-	28	22	11	-
χ^2/(N-1)	2.4[b]	2.9[b]	-	-	5.8[b]	2.2[b]	0.99	-
UWM	3.089 (34)	7.56 (10)	-	-	0.897 (18)	0.185 (4)	0.0150 (8)	-
WM	3.173 (11)	7.775 (27)	-	-	0.905 (4)	0.1914 (13)	0.0161 (4)	-
LWM	3.09 (11)[X]	7.56 (29)[X]	-	-	0.905 (30)[X]	0.185 (11)[X]	= WM	-
Selected Data								
# data points, N	7	7	8	3	8	8	4	3
χ^2/(N-1)	1.6	1.1	1.1	0.17	1.2	0.22	1.7	1.8
Iγ; UWM	3.178 (27)	7.88 (7)	1.837 (21)	0.0107 (3)	0.943 (10)	0.1958 (14)	0.0154 (13)	0.0078 (15)
Iγ; WM	3.205 (13)	7.868 (31)	1.856 (9)	0.0103 (8)	0.943 (6)	0.1957 (16)	0.0167 (5)	0.0084 (4)
Iγ; LWM	= WM	=WM	=WM	=WM	= WM	=WM	= WM	= WM
Iγ; Norm Res	3.205 (13)	7.868 (31)	1.856 (9)	0.0103 (8)	0.943 (6)	0.1957 (16)	0.0167 (5)	0.0084 (4)
Iγ; Rajeval	3.209 (13)	7.871 (31)	1.853 (10)		0.944 (6)	0.1957 (16)	0.0166 (6)	0.0085 (4)
Adopted Iγ	3.205 (13)	7.87 (3)	1.856 (9)	0.0103 (8)	0.943 (6)	0.1957 (16)	0.0167 (5)	0.0084 (4)
Source	Sel; WM	Sel; WM	Sel; WM	Sel; WM	Sel; WM	Sel; WM	Sel; WM	Sel; WM

[@] Experimental data are listed along with the authors' statistical uncertainty in the least significant digits (given in parentheses). If two numbers are shown in parentheses, the second is the uncertainty after any uncertainty in the reference line (847γ) has been combined in quadrature with the former uncertainty. Note that reference codes are given with the leading two digits of the code omitted. In the 'Analysis' section, the following abbreviations have been used: UWM= unweighted mean; WM= weighted mean; LWM= values recommended by the program LWEIGHT; Norm Res = result from Normalised residuals analysis; Rajeval = result from Rajeval technique analysis; NR-Raj = mean of values from Normalised Residuals and Rajeval technique analyses, using the larger of the two uncertainties 'Sel' referrers to data from eight selected references in which the detector efficiency curves were well-characterised to at least 3600 keV (2002MoZP, 2000Ra36, 1990Me15, 1980St20, 1978Ha53, 1977Ge12, 1974BoXX and 1971Si29).

[*] This γ-ray intensity datum is identified by LWEIGHT as a statistical outlier based on the Chauvenet criterion.

[a] Transition reported in one study only.

[b] Exceeds critical value for $\chi^2/(N-1)$ so LWEIGHT considers the data in this dataset to be discrepant.

[c] Reported as 0.310 in 1980Sh28, but this is clearly a typographical error; the value from the literature with which it is compared is also an order of magnitude too large.

[d] 1972Pe20 took data using three different detectors (cylindrical, rectangular and trapezoidal), each calibrated using Monte Carlo calculations; data from these detectors are shown separately.

[e] Weighted mean, external uncertainty recommended by LWEIGHT.

[f] Datum rejected by Rajeval analysis.

[S] Data from this reference included in ‘selected data’ analysis.

[X] LWEIGHT has expanded the uncertainty to encompass the most precise datum.