^{125}Sb - Comments on evaluation
by R. G. Helmer and E. Browne

The initial ^{125}Sb decay data evaluation was performed by R.G.Helmer in May 2004. This current (revised) evaluation was carried out in November 2004. The literature available to November 2004 was included. A second update was performed in March 2021 by M.A. Kellett after noticing that the α_T coefficient of the 109 keV gamma was incorrectly entered in SAISINUC as 354.5 (110) instead of 355 (11). The α_T was corrected and the X-ray/Auger as well as the conversion electrons were updated as a consequence (using the new calculation described in Bé *et al*. App.Rad.Isot. 64 p.1435 published in 2006).

1. Decay Scheme

^{125}Sb decays by β^- emission to levels in ^{125}Te.

The γ ray at 109 keV depopulates the isomeric level at 144 keV (half-life of 57.4 days), so its intensity depends on any chemical separation and its grow-in time. It takes about 1 year for it to be in equilibrium with the other γ rays to within 1%. The level at 35 keV is primarily fed from higher-lying levels, but 27% of the 35-keV γ-ray intensity comes via the isomeric level when it is at equilibrium. So, for a chemically separated source, it needs about 8 months grow-in to be at equilibrium at the 1% level.

The (direct β-, and indirect, through γ rays) population of the isomer is 22.9 (9) % calculated from this adopted decay scheme.

2. Nuclear Data

The decay energy of 766.7 (21) keV is from the 2003 mass evaluation (2003Au03).

For the adopted decay scheme, the total radiation energy per decay is calculated to be 767 (8) keV, which agrees well with the decay energy of 766.7 (21) keV and confirms the internal consistency of this decay scheme.

The population of several additional levels has been reported, especially by 1998Sa55, but these levels are uncertain; they are: 402-, 538-, 652- and 728- keV. Verification of the associated γ rays is needed. Thus, β and γ transitions to and from these levels have not been included here.

The adopted parent half-life is 1007.54 (9) days, or 2.75855 (25) years, from the following data:

2.7 y	1950Le09
2.6 (1) y	1960Kl04
2.78 (4) y	1961Wy01
2.71 (2) y	1965Fl02
2.81 (5) y	1966La13
1007.3 (3) d	1980Ho17
1008.1 (8) d	1983Wa26
1007.3 (3) d	1992Un01, superseded by 2002Un02
1007.56 (10) d	2002Un02
1007.54 (9) d	Weighted average

Adopted value is the weighted average of the three precise values (which are from after 1970) which are not superseded. The reduced-χ^2 value for this average is 0.58 and the value from 2002Un02 has 89% of the relative weight.

The values from other evaluations are 2.75856 (25) years from 1999Ka26, which did not have available the value from 2002Un02, and 1007.48 (21) days from 2004Wo02 where the relative weight of the value from 2002Un02 was presumably reduced to 50%.

The level half-lives are also taken from the evaluation 1999Ka26 and are as follows:

Energy (keV)	Half-life
0	Stable
35	1.48 (1) ns
144	57.40 (15) d
321	0.673 (13) ns
443	19.1 (6) ps
463	13.2 (5) ps
525	<160 ns
636	40 (20) ps
642	≤ 70 ps
671	1.26 (6) ps

The references that provide measured values of the level half-lives are: 1965An05, 1966In02, 1967Vo21, 1968Ho05, 1968Ko08, 1969Ho42, 1970Ba69, 1970Be47, 1970Be51, 1970Ma20, 1972Be21, 1972La21, 1972Sa08, 1972Sa33, 1988GeZS, and 1992De26. Half-lives for the levels at 443, 463, and 671 keV were calculated from B(E2) values from Coulomb excitation studies (1999Ka26).

2.1 β^- Transitions

The probabilities for the β^- transitions branches are computed from the intensity balances from the γ-ray transitions for the excited states above 150 keV. Upper limits for the β^- probabilities to the 0- and 35-keV levels can be computed from the log *ft* systematics (1998Si17); these values are 0.002% and 1.9%, respectively. In the adopted level scheme it is assumed that both of these values are 0. The resulting values are :

Level (kev)	$P_{\beta-}$ (%)	Character	log *ft*
0	<0.002	unique 2nd forb.	>13.9
35	≡0	2nd forb.	>10.6
144	13.4(9)	unique 1st forb.	9.77
321	7.54 (9)	1st forb.	9.32
443	0.089 (10)	2nd forb.	10.79
463	40.3 (4)	allowed	8.04
525	1.251 (12)	1st forb.	9.23
636	18.07 (19)	allowed	7.23
642	5.82 (5)	allowed	7.66
671	13.58 (12)	allowed	6.93

For comparison, the measured values to the 144-keV level are 13.6 (9)% by 1998Gr13, 13.4% by 1959Na06, and 13.7% by 1964Ma30.

2.2 γ Transitions

The γ-ray multipolarities and mixing ratios have been taken from 1999Ka26 and the internal-conversion coefficients are interpolated from the tables of 1978Ro22, except the E5, which is from 1976Ba63. These values are as given in the following table. The uncertainties in the internal-conversion coefficients are taken to be 3% of the value, unless otherwise given. The total theoretical conversion coefficient of the M4 109-keV γ ray, calculated from 1978Ro22, has been reduced by 2.5% as suggested by 1990Ne01.

Energy (keV)	Multi-polarity.	Δ	%E2 or M2	α	α_K
19	[M1]			11.3	0.0
35	M1+E2	0.029 (+3-2)	0.084 (18)	14.3	12.1
109	M4			354.6	182
117	E1			0.127	0.109
(144)	[E5]			265	39.8
172	M1(+E2)	-0.004 (8)	<0.014	0.151	0.129
176	M1+E2	-0.60 (2)	26.5 (18)	0.167	0.139
178	M1+E2			0.18 (4)	0.147 (26)
198	[E2]			0.154	0.123
204	M1+E2	+1.60 (3)	72 (3)	0.128	0.104
208	M1+E2	+0.105 (14)	1.1 (3)	0.092	0.0791
227	(M1+E2)			0.084 (13)	0.070 (11)
315	(E1)			0.00839	0.00726
321	E1			0.00798	0.0691
380	E2			0.0183	0.0154
408	M1+E2	+1.50 (7)	69 (6)	0.0152	0.0129
427	M1+E2	-0.538 (11)	22.4 (9)	0.0138	0.0119
443	M1+E2	-2.3 (1)	84 (7)	0.0118	0.0100
463	E2			0.0102	0.0086
497	[M2]			0.0318	0.0271
600	E2			0.00498	0.00421
606	E2			0.00485	0.00415
635	M1+E2	+0.332 (3)	9.9 (2)	0.00526	0.00455
672	E2			0.00373	0.00319

The references that provide data on the multipolarities and mixing ratios are: 1968An15 [from α_K], 1970Na12 [α_K, K/L], 1970Wy01 [γγ(θ)], 1971Kr11 [γ(θ) oriented nuclei], 1971Ro17 [γγ(θ)], 1971Sa24 [γγ(θ)], 1972Ba12 [γγ(θ)], 1972Br02 [L_i/L_j], 1975Ma32 [M_i/M_j], 1982Mu02 [α_K], 1982Si18 [γγ(θ)], 1983Si14 [γγ(θ)], 1997De38 [γγ(θ)], 1998Ro20 [γγ(θ)], 1998Sa36 [α_K, K/L], 1998Sa55 [α_K], and 1999Sa73 [α_K].

The γ-ray energies have been reported by 1969Ch09, 1970Na12, 1973Gu10, 1976Wa13, 1990He05, 1998Sa55, and 2000He14, with the last three references giving the more precise values. The calibration details are not given in 1998Sa55, so it is not possible to compare these values with the others.

The values of 2000He14 are on the most recent energy scale on which the energy of the strong γ ray from the decay of ^{198}Au is 411.80205 (17) keV, while those from 1990He05 are on a scale for which this energy is 411.8044 (11) keV. No correction is made here for this difference. The energies are taken from 2000He14 if they are available there, from 1990He05 as a second choice, and as indicated otherwise. (Often these values are from use of energy combinations so they can not be averaged with direct measurements). These values are: from 2000He14: 176.314 (2), 204.138 (10), 208.077 (5), 427.874 (4), 443.555 (9), 463.365 (4), 600.597 (2), 606.713 (3), 635.950 (3), and 671.441 (6); from 1990He05: 35.489 (5), 172.719 (8), 178.842 (5), 198.654 (11), 227.891 (10), 380.452 (8), and 408.065 (10); 1976Wa13 and 1998Sa55: 19.981 (6), 110.86 (7), 314.96 (8), and 497. 38 (9); 1973Gu10, 1976Wa13, and 1998Sa55: 109.27 (11), and 116.95 (7).

The recommended relative and absolute γ-ray emission probabilities are discussed in section 4.2.

3. Atomic Data

3.1 X rays and Auger electrons

The fluorescence yield data are from Schönfeld and Janßen (1996Sc06) and the EMISSION code; these values are ω_K, 0.875(4); mean ω_L, 0.086 (4); and η_{KL}, 0.917 (4).

The EMISSION code also supplies the Auger electron emission probabilities; these values are: KLL, 7.0 (4); KLX, 3.17 (17); and KXY, 0.359 (20).

4 Emissions

4.1 K x-rays

The relative K x-ray emission probabilities are from 1996Sc06 and the absolute probabilities have been computed from these relative probabilities, the above γ-ray emission probabilities, and internal-conversion coefficients by using the EMISSION code.

4.2 γ rays

The measured relative γ-ray emission probabilities (or intensities) are given in the following table. The values for the 109-keV γ ray are for a source in equilibrium.

Part 1

Energy	68An15[a]	68Se11[b]	69Ch09	70Na12	73Gu10	74Il02[c]	76Wa13	77Ar10	77Ge12
19.9							0.068 (33)		
35.5				19.6 (20)		1.42 (9)			
58.3									
109.3		0.3	0.3 (1)	0.39 (4) [f]	0.18 (2)	0.36 (4)			
110.8		~ 0.05				0.170 (23)	0.0031 (3)		
117.0		0.75		1.13 (1) [f]	0.75 (4) [f]	0.96 (7)	0.866 (14)	0.89 (4)	0.910 (29)
172.6		0.8	0.9 (1)	0.90 (10)	0.65 (4)	0.47 (3)	0.618 (10)	0.65 (5)	
176.3		20.5	21.2 (11)	24.9 (20)	23.9 (8)	23.2 (13)	23.06 (7) [g]	22.9 (7)	23.9 (7)
178.7		~0.1			0.08 (1)	0.05 (1)	0.092 (14)	0.10 (2)	
198.6		~0.04			0.04 (1)		0.044 (10)	0.055 (10)	
204.1		0.9	1.0 (1)	1.15 (10)	1.21 (5)	1.10 (8)	1.097 (14)	0.99 (5)	1.15 (4)
208.1		0.7	0.8 (1)	0.85 (8)	0.90 (4)	0.83 (5)	0.802 (14)	0.79 (4)	0.829 (25)
227.9	0.4 (1)	0.4		0.44 (4)	0.47 (2)	0.64 (4)	0.448 (14)	0.45 (2)	
315.0							0.0143 (14)	0.020 (4)	
321.0	1.4 (2)	1.25	1.4 (1)	1.41 (10)	1.42 (5)	1.6 (1)	1.393 (14)	1.41 (7)	1.422 (16)
380.4	5 (1)	5	5.0 (4)	5.27 (40)	5.22 (17)	5.43 (32)	5.16 (3)	5.15 (20)	5.10 (5)
408.1	0.9 (4)	0.6		0.62 (6)	0.59 (3)	0.50 (3)	0.62 (2)	0.59 (3)	

Energy	68An15[a]	68Se11[b]	69Ch09	70Na12	73Gu10	74Il02[c]	76Wa13	77Ar10	77Ge12
427.9	100.	100.	100.	100.	100.	100.	100.0 (3)	100.	100.0 (10)
443.4	0.5 (3)	1		1.03 (10)	1.07 (4)	1.10 (7)	1.03 (2)	1.05 (5)	
463.4	33 (4)	35.5	35.3 (20)	35.4 (28)	35.3 (13)	35.2 (23)	35.50 (7)	35.2 (10)	35.26 (37)
497.0							0.0122(14)	0.011 (2)	
600.6		61	61.2 (34)	61.5 (49)	59.6 (18)	53.6 (32)	60.39 (10)	60.1 (18)	60.6 (6)
606.6		17	17.1 (12)	16.4 (12)	16.9 (6)	19.0 (11)	17.052 (34)	16.8 (5)	17.12 (17)
635.9	42 (2)	37	37.0 (22)	37.31 (30)	38.2 (12)	35.6 (23)	38.45 (7)	38.4 (11)	38.6 (4)
671.4	6.5 (5)	6	5.6 (5)	6.0 (5)	6.09 (20)	6.24 (38)	6.11 (14)	6.02 (24)	6.18 (6)

Part 2

Energy	79Pr08	80Ro22	83Si14	84Iw03	86Wa35	93Fa02	98Sa55	90He05
19.9			0.068 (2)			0.072 (6)	0.068 (3)	
35.5			14.53 (35)			14.79 (8) [d]	17.7 (2)	
58.3			0.091 (4)			0.093 (2)	0.0042 (20)	
109.3	0.26 (4)		0.232 (5)	0.241 (24)		0.235 (16)	0.232 (6)	
110.8	0.02 (1) [h]		0.0042 (3)				0.0039 (3)	
117.0	0.91 (5)	1.01 (12)	1.060(10) [f]	0.867 (25)		0.885 (5) [j]	0.945 (15)	0.867 (24)
172.6	0.74 (6)	0.89 (6)	0.86 (2) [f]	0.69 (4)		0.72 (4)	0.67 (4)	0.659 (11)
176.3	22.9 (6)	25.45 (60)	24.5 (8)	22.62 (21)	22.91 (41)	23.65 (34)	23.09 (20)	22.96 (24)
178.7	0.11 (1)		0.130 (5)	0.11 (4)		0.099 (6)	0.121 (2) [j]	

Energy	79Pr08	80Ro22	83Si14	84Iw03	86Wa35	93Fa02	98Sa55	90He05
198.6	0.06 (1)		0.081 (4) [f]	0.030 (11)		0.046 (9)	0.044 (3)	
204.1	1.12 (4)	1.19 (22)	1.14 (4)	1.08 (3)		1.19 (5)	1.014 (10)	1.080 (23)
208.1	0.80 (4)	0.96 (10)	0.82 (2)	0.788 (21)		0.89 (3)	0.860 (10)	0.825 (16)
227.9	0.42 (2)	0.42 (7)	0.44 (2)	0.433 (12)		0.465 (25)	0.442 (9)	0.443 (23)
315.0			0.013 (2)				0.0144 (15)	
321.0	1.48 (6)	1.46 (8)	1.30 (5)	1.391 (24)		1.45 (5)	1.43 (2)	1.41 (3)
380.4	5.18 (20)	5.26 (10)	6.02 (25) [f]	5.06 (4)	5.12 (15)	5.09 (3)	5.17 (4)	5.14 (5)
408.1	0.57 (4)	0.66 (8)	0.61 (3)	0.608 (21)		0.59 (2)	0.624 (7)	0.630 (19)
427.9	100.	100.	100.	100.0 (7)	100.	100.	100.	100.0 (8)
443.5	1.06 (2)	1.03 (8)	1.12 (5)	0.989 (23)		1.03 (1)	1.05 (11)	1.019 (29)
463.4	35.1 (8)	35.45 (84)	35.50 (7)	35.23 (14)	35.4 (9)	35.64 (10)	35.12 (18)	35.07 (28)
497.0			0.015 (3)	0.009 (8)		0.018 (3)	0.009 (1)	
600.6	60.4 (11)	59.3 (12)	60.50 (10)	59.54 (22)	60.95 (67)	59.70 (10)	59.22 (18)	59.09 (45)
606.6	16.6 (5)	16.25 (62)	17.2 (3)	16.94 (7)	16.97 (26)	16.98 (21)	16.92 (6)	16.70 (14)
635.9	38.7 (8)	37.7 (10)	39.1 (2)	37.87 (14)	37.47 (27)	38.78 (32)	38.32 (12)	37.52 (30) [h]
671.4	6.04 (16)	6.92 (14) [f]	5.9 (3)	6.039 (24)	5.65 (12)	5.97 (11)	6.03 (2)	6.05 (6)

Part 3 – Adopted relative and absolute values

Energy	Adopted	wtd. avg.	σ_{int}	reduced-χ^2	σ_{ext}	σ_{LWM}	P_γ (%) × 0.2955 (24)	90Lo03 eval.	1999Ka26 eval.
19.9	0.0683 (16)	0.0683	0.0016	0.14			0.0202 (5)	0.068 (2)	0.069 (3)
35.5	19.6 (6) [i]	16.0	0.13	43	0.9	1.7	5.79 (18)	14.53 (35)	15.2 (10)
58.3		[e]						0.091 (4)	0.05 (4)
109.3	0.231 (4)	0.2310	0.0036	1.3	0.0041		0.0683 (12)	0.233 (5)	
110.8	0.0037 (3)	0.00373	0.00017	3.6	0.00033		0.00109 (9)	0.0036 (6)	0.0035 (4)
117	0.890 (9)	0.890	0.006	2.5	0.009		0.263 (4)	1.03 (4)	0.887 (9)
172.6	0.65 (3)	0.649	0.007	4.6	0.014	0.031	0.192 (9)	0.75 (5)	0.646 (24)
176.3	23.09 (15)	23.09	0.09	2.6	0.15		6.82 (7)	23.06 (14)	23.11 (5)
178.7	0.116 (5)	0.116	0.002	5.0	0.005		0.0343 (15)	0.110 (9)	0.114 (8)
198.6	0.0448 (24)	0.0448	0.0024	0.9			0.0132 (7)	0.054 (11)	0.0432 (20)
204.1	1.06 (5)	1.061	0.007	4.6	0.015	0.047	0.313 (15)	1.105 (11)	1.070 (21)
208.1	0.833 (27)	0.833	0.006	2.3	0.009	0.027	0.246 (8)	0.808 (9)	0.837 (14)
227.9	0.443 (9)	0.443	0.005	0.5			0.131 (3)	0.437 (12)	0.443 (6)
315	0.0144 (9)	0.0144	0.0009	0.8			0.0043 (3)	0.0138 (9)	0.0136 (16)
321	1.409 (8)	1.409	0.008	0.9			0.416 (4)	1.40 (2)	1.404 (9)
380.4	5.145 (13)	5.145	0.012	1.2	0.013		1.520 (15)	5.13 (4)	5.124 (19)
408.1	0.617 (5)	0.617	0.005	0.7			0.182 (2)	0.611 (12)	0.623 (6)
427.9							29.55 (24)	100	100
443.5	1.033 (7)	1.033	0.007	1.0			0.305 (4)	1.03 (2)	1.035 (6)

Energy	Adopted	wtd. avg.	σ_{int}	reduced-χ^2	σ_{ext}	σ_{LWM}	P_γ (%) × 0.2955 (24)	90Lo03 eval.	1999Ka26 eval.
463.4	35.47 (4)	35.47	0.04	1.0			10.48 (9)	35.47 (5)	35.45 (10)
497	0.0109 (11)	0.0109	0.0007	2.4	0.0011		0.0032 (3)	0.013 (2)	0.014 (8)
600.6	60.1 (4)	60.07	0.05	6.0	0.13	0.43	17.76 (18)	60.36 (11)	59.62 (16)
606.6	16.997 (27)	19.997	0.027	1.0			5.02 (5)	17.03 (3)	16.83 (6)
635.9	38.31 (14)	38.31	0.05	4.7	0.11	0.14	11.32 (10)	38.36 (15)	37.9 (3)
671.4	6.036 (17)	6.036	0.014	1.5	0.017		1.783 (16)	6.06 (2)	6.049 (19)

[a] All values from this reference omitted from analysis since 5 out of 8 were outliers in an initial averaging.
[b] All values from this reference omitted from analysis since they do not have uncertainties.
[c] All values from this reference omitted from analysis since 9 out of 19 were outliers in an initial averaging.
[d] Uncertainty increased from 0.08 to 0.20 by evaluator.
[e] No value adopted; data are very inconsistent, namely, 0.091, 0.093, and 0.004.
[f] Omitted from average, outlier.
[g] Uncertainty increased from 0.07 to 0.20 by evaluator.
[h] Typographical error in reference.
[i] Equilibrium intensity deduced by evaluator from transition intensity balance.
[j] Uncertainty increased in analysis to reduce relative weight to 50%.

Other γ rays have been reported in various papers, but have not been included in the scheme adopted here. For those from 1998Sa55 the energies and relative emission probabilities are listed here and for the other references only the energies are given. These lines are:
1968An15: 122.4, 489.8;
1968Se11: 105.8, 391.5;
1973Gu10: 81.8, 122.4;
1974Il02: 81.8, 489.8;
1976Wa13: 146.1;
1979Pr08: 81.8, 122.1, 366.0, 402.0;
1983Si14: 642.1, 693.2, 729.8; and
1998Sa55: [I_γ]: 61.8 [0.0067 (27)]; 81.0 [0.017 (1)]; 132.8 [0.0029 (19)]; 209.3 [0.152 (9)]; 331.8 [0.0085 (8)]; 366.5 [0.027 (2)]; 401.9 [0.0221 (2)]; 489.7 [0.0046 (23)]; 491.2 [0.016 (8)]; 503.1 [0.013 (6)]; 538.6 [0.0047 (25)]; 617.4 [0.018 (2)]; and 652.8 [0.009 (3)].

The decay scheme normalization deduced here has assumed the sum of all the γ-ray transition probabilities (photons + conversion electrons) to the ground state and 35-keV level (not including that of the 35-keV γ ray) to be equal to 100%. The relative equilibrium intensity (0.231 (4)) of the 109-keV γ ray has been reduced by 5.7% in the calculation because of its apparent increase due to the 57-day half-life of the 144-keV isomer from where it decays. Also, its total M4 theoretical conversion coefficient of 363.7 has been reduced by 2.5% to 354.6 as recommended in 1990Ne01. This reduction is usually applied to theoretical M4 conversion coefficients evaluated for the Evaluated Nuclear Structure Data File (ENSDF). This procedure has produced a decay scheme normalization factor of 0.2955 (24). The resulting γ-ray emission intensities are given in the third from the last column of the table given above. The last two columns give the relative probabilities from the evaluations of 1990Lo03 and 1999Ka26. The agreement is very good except for the line at 35 keV, where evaluators have preferred to use a value deduced from a γ–ray probability balance. The relative equilibrium intensity of 19.6 (6) for the 35-keV γ ray has been obtained from a transition probability balance at the 35-keV level. Its absolute emission intensity is then 5.79 (18) %.

The γ ray at 109 keV depopulates the isomeric level at 144 keV (half-life of 58 days), so its intensity depends on any chemical separation and its grow-in time. It takes about 1 year for it to be in equilibrium with the other γ rays to within 1 %. The level at 35 keV is primarily fed from higher-lying levels, but 27% of the 35-keV γ-ray intensity comes via the isomeric level when it is at equilibrium. So, for a chemically separated source, it needs about 8 months grow-in to be at equilibrium at the 1% level.

The population of the isomer was measured to be 24.3 (3) % (1998Gr13) compared to the 22.9 (9) % calculated from this adopted scheme.

4.3 Conversion electrons

From the adopted γ-ray intensities, and the conversion coefficients, one obtains the following conversion electron emission probabilities:

γ energy (keV)	shell	electron energy	emission prob. (%)
19.80	L	14.86	0.184 (7)
	M	18.79	0.0368 (14)
	N	19.63	0.0077 (3)
35.49	K	3.675	70 (3)
	L	30.55	9.5 (4)
	M	34.48	1.9 (1)
	N	35.35	0.46 (2)
109.28	K	77.46	12.4 (5)
	L	104.33	9.2 (5)
	M	108.27	2.1 (1)

γ energy (keV)	shell	electron energy	emission prob. (%)
	N	109.11	0.45 (2)
116.96	K	85.14	0.0287 (11)
	L	112.02	0.00371 (15)
172.72	K	140.90	0.0248 (10)
	L	167.78	0.0032 (1)
176.31	K	144.50	0.95 (4)
	L	171.37	0.150 (6)
	M	175.30	0.031 (1)
178.84	K	147.03	0.0050 (8)
	L	173.90	0.0009 (3)
198.65	K	166.84	0.00161 (10)
204.14	K	172.32	0.0322 (19)
	L	199.19	0.0059 (4)
	M	203.13	0.00120 (7)
208.08	K	176.26	0.0192 (8)
	L	203.13	0.00248 (10)
227.89	K	196.08	0.0090 (15)
	L	222.95	0.0014 (5)
321.04	K	289.23	0.00284 (11)
380.45	K	348.64	0.0231 (9)
	L	375.51	0.0035 (1)
408.06	K	376.25	0.00232 (9)
427.87	K	396.06	0.35 (2)
	L	422.94	0.0450 (18)
	M	426.87	0.0090 (3)
443.56	K	411.74	0.00302 (12)
463.36	K	431.55	0.090 (4)
	L	458.43	0.0128 (5)
	M	462.36	0.0026 (1)
600.60	K	568.78	0.074 (3)
	L	595.66	0.0101 (4)
	M	599.59	0.0020 (1)
606.72	K	574.90	0.0206 (8)
	L	601.77	0.0028 (1)
635.95	K	604.14	0.0509 (20)
	L	631.01	0.0063 (2)
671.44	K	639.62	0.00564 (22)
	L	666.50	0.0008

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