I. SUPPLEMENTARY INFORMATION

A. Kα diagram eigenvalues

Initial Conf.	J	P	Final Conf.	J	P	Energy (eV)	$A_L(s^{-1})$ ($\times 10^{12}$)	g_f	A_L/A_V	Cluster
$1s_{1/2}3d_{3/2}$	1	+	$2p_{3/2}3d_{3/2}$	0	-	4090.8340	25.0372	0.016570	1.012	α_{14}
$1s_{1/2}3d_{3/2}$	1	+	$2p_{3/2}3d_{3/2}$	1	-	4090.5442	39.0029	0.025824	1.012	α_{14}
$1s_{1/2}3d_{3/2}$	1	+	$2p_{3/2}3d_{5/2}$	1	-	4087.5334	27.5694	0.018295	1.011	α_{13}
$1s_{1/2}3d_{3/2}$	1	+	$2p_{1/2}3d_{3/2}$	1	-	4083.1108	8.6385	0.005745	1.011	α_{22}
$1s_{1/2}3d_{3/2}$	1	+	$2p_{3/2}3d_{5/2}$	2	-	4090.0168	8.5103	0.005638	1.012	α_{11}
$1s_{1/2}3d_{3/2}$	1	+	$2p_{3/2}3d_{3/2}$	2	-	4089.2024	66.9880	0.044390	1.012	α_{12}
$1s_{1/2}3d_{3/2}$	1	+	$2p_{1/2}3d_{3/2}$	2	-	4085.2617	47.0217	0.031207	1.012	α_{21}
$1s_{1/2}3d_{3/2}$	1	+	$2p_{1/2}3d_{5/2}$	2	-	4085.0808	3.4890	0.002319	1.011	α_{21}
$1s_{1/2}3d_{3/2}$	2	+	$2p_{3/2}3d_{3/2}$	1	-	4090.5376	12.7897	0.014103	1.013	α_{14}
$1s_{1/2}3d_{3/2}$	2	+	$2p_{3/2}3d_{5/2}$	1	-	4087.5269	1.3720	0.001512	1.015	α_{13}
$1s_{1/2}3d_{3/2}$	2	+	$2p_{1/2}3d_{3/2}$	1	-	4083.1045	31.3826	0.034796	1.011	α_{22}
$1s_{1/2}3d_{5/2}$	2	+	$2p_{3/2}3d_{3/2}$	1	-	4090.5925	8.8833	0.009801	1.012	α_{14}
$1s_{1/2}3d_{5/2}$	2	+	$2p_{3/2}3d_{5/2}$	1	-	4087.5818	27.1328	0.030026	1.011	α_{13}
$1s_{1/2}3d_{5/2}$	2	+	$2p_{1/2}3d_{3/2}$	1	-	4083.1592	8.9418	0.009933	1.009	α_{22}
$1s_{1/2}3d_{3/2}$	2	+	$2p_{3/2}3d_{5/2}$	2	-	4090.0103	11.2152	0.012379	1.012	α_{11}
$1s_{1/2}3d_{3/2}$	2	+	$2p_{3/2}3d_{3/2}$	2	-	4089.1958	18.7685	0.020744	1.011	α_{12}
$1s_{1/2}3d_{3/2}$	2	+	$2p_{1/2}3d_{3/2}$	2	-	4085.2551	45.5457	0.050407	1.012	α_{21}
$1s_{1/2}3d_{3/2}$	2	+	$2p_{1/2}3d_{5/2}$	2	-	4085.0742	0.0315	0.000035	1.003	α_{21}
$1s_{1/2}3d_{5/2}$	2	+	$2p_{3/2}3d_{5/2}$	2	-	4090.0652	31.9718	0.035304	1.011	α_{11}
$1s_{1/2}3d_{5/2}$	2	+	$2p_{3/2}3d_{3/2}$	2	-	4089.2507	13.8004	0.015245	1.011	α_{12}
$1s_{1/2}3d_{5/2}$	2	+	$2p_{1/2}3d_{3/2}$	2	-	4085.3101	0.3203	0.000355	1.010	α_{21}
$1s_{1/2}3d_{5/2}$	2	+	$2p_{1/2}3d_{5/2}$	2	-	4085.1292	29.1632	0.032291	1.011	α_{21}
$1s_{1/2}3d_{3/2}$	2	+	$2p_{3/2}3d_{3/2}$	3	-	4089.7910	96.5223	0.115232	1.012	α_{11}
$1s_{1/2}3d_{3/2}$	2	+	$2p_{3/2}3d_{5/2}$	3	-	4088.9976	0.6952	0.000768	1.011	α_{12}
$1s_{1/2}3d_{3/2}$	2	+	$2p_{1/2}3d_{5/2}$	3	-	4084.9800	0.0253	0.000028	0.998	α_{21}
$1s_{1/2}3d_{5/2}$	2	+	$2p_{3/2}3d_{3/2}$	3	-	4089.8459	0.2253	0.000250	1.008	α_{12}
$1s_{1/2}3d_{5/2}$	2	+	$2p_{3/2}3d_{5/2}$	3	-	4089.0525	53.5934	0.059206	1.012	α_{12}
$1s_{1/2}3d_{5/2}$	2	+	$2p_{1/2}3d_{5/2}$	3	-	4085.0349	52.0751	0.057625	1.012	α_{21}
$1s_{1/2}3d_{5/2}$	3	+	$2p_{3/2}3d_{5/2}$	2	-	4090.0493	19.1651	0.029597	1.013	α_{11}
$1s_{1/2}3d_{5/2}$	3	+	$2p_{3/2}3d_{3/2}$	2	-	4089.2349	1.6325	0.002525	1.011	α_{12}
$1s_{1/2}3d_{5/2}$	3	+	$2p_{1/2}3d_{3/2}$	2	-	4085.2942	1.4533	0.002252	1.011	α_{21}
$1s_{1/2}3d_{5/2}$	3	+	$2p_{1/2}3d_{5/2}$	2	-	4085.1133	31.9903	0.049549	1.012	α_{21}
$1s_{1/2}3d_{5/2}$	3	+	$2p_{3/2}3d_{3/2}$	3	-	4089.8301	0.3564	0.000550	1.014	α_{12}
$1s_{1/2}3d_{5/2}$	3	+	$2p_{3/2}3d_{5/2}$	3	-	4089.0366	36.2429	0.056074	1.011	α_{12}
$1s_{1/2}3d_{5/2}$	3	+	$2p_{1/2}3d_{5/2}$	3	-	4085.0190	38.8931	0.060272	1.012	α_{21}
$1s_{1/2}3d_{5/2}$	3	+	$2p_{3/2}3d_{5/2}$	4	-	4090.1274	104.3670	0.149153	1.012	α_{11}

TABLE I. Eigenvalues and their intensities for the diagram line of Sc Kα as in the first panel of Fig. 2. Eigenvalues are characterised by good relativistic quantum numbers of the initial and final leading configuration in terms of hole states, total angular momentum J, and parity P. Also given are the Einstein A coefficient as calculated in the length gauge, and the ratio of the value as calculated in the length and velocity gauges which gives a strong indication of convergence.

B. Kβ diagram eigenvalues

Initial Conf.	J	P	Final Conf.	J	P	Energy (eV)	$A_L(s^{-1})$ $(\times 10^{12})$	g_f	A_L/A_V	Cluster
$1s_{1/2}3d_{3/2}$	1	+	$3p_{1/2}3d_{3/2}$	0	-	4463.3115	3.1189	0.0174691	1.012	β_{12}
$1s_{1/2}3d_{3/2}$	1	+	$3p_{3/2}3d_{3/2}$	1	-	4463.2271	2.6467	0.0148257	1.012	β_{12}
$1s_{1/2}3d_{3/2}$	1	+	$3p_{1/2}3d_{3/2}$	1	-	4459.3340	6.7047	0.0376865	1.010	β_3
$1s_{1/2}3d_{3/2}$	1	+	$3p_{3/2}3d_{5/2}$	1	-	4455.2793	0.0000	0.0000001	1.008	β_3
$1s_{1/2}3d_{3/2}$	1	+	$3p_{3/2}3d_{5/2}$	2	-	4463.0527	0.2278	0.0012765	1.012	β_{12}
$1s_{1/2}3d_{3/2}$	1	+	$3p_{1/2}3d_{3/2}$	2	-	4461.6108	3.7672	0.0772264	1.011	β_{11}
$1s_{1/2}3d_{3/2}$	1	+	$3p_{3/2}3d_{3/2}$	2	-	4459.4561	0.3923	0.0022052	1.010	β_3
$1s_{1/2}3d_{3/2}$	1	+	$3p_{1/2}3d_{5/2}$	2	-	4459.2964	1.2765	0.0071754	1.010	β_3
$1s_{1/2}3d_{3/2}$	2	+	$3p_{3/2}3d_{3/2}$	1	-	4463.2148	2.2738	0.0212280	1.012	β_{12}
$1s_{1/2}3d_{3/2}$	2	+	$3p_{1/2}3d_{3/2}$	1	-	4459.3218	0.8687	0.0081375	1.010	β_3
$1s_{1/2}3d_{3/2}$	2	+	$3p_{3/2}3d_{5/2}$	1	-	4455.2676	0.0000	0.0000002	1.008	
$1s_{1/2}3d_{5/2}$	2	+	$3p_{3/2}3d_{3/2}$	1	-	4463.2661	1.7613	0.0164424	1.012	β_{12}
$1s_{1/2}3d_{5/2}$	2	+	$3p_{1/2}3d_{3/2}$	1	-	4459.3730	0.7376	0.0069102	1.010	β_3
$1s_{1/2}3d_{5/2}$	2	+	$3p_{3/2}3d_{5/2}$	1	-	4455.3184	0.0000	0.0000001	1.008	
$1s_{1/2}3d_{3/2}$	2	+	$3p_{3/2}3d_{5/2}$	2	-	4463.0405	0.8372	0.0078172	1.012	β_{12}
$1s_{1/2}3d_{3/2}$	2	+	$3p_{1/2}3d_{3/2}$	2	-	4461.5986	0.4207	0.0039325	1.011	β_{11}
$1s_{1/2}3d_{3/2}$	2	+	$3p_{3/2}3d_{3/2}$	2	-	4459.4438	8.1189	0.0760523	1.010	β_3
$1s_{1/2}3d_{3/2}$	2	+	$3p_{1/2}3d_{5/2}$	2	-	4459.2842	0.0097	0.0000905	1.010	β_3
$1s_{1/2}3d_{5/2}$	2	+	$3p_{3/2}3d_{5/2}$	2	-	4463.0913	0.9104	0.0085003	1.012	β_{12}
$1s_{1/2}3d_{5/2}$	2	+	$3p_{1/2}3d_{3/2}$	2	-	4461.6499	0.7248	0.0067764	1.011	β_{11}
$1s_{1/2}3d_{5/2}$	2	+	$3p_{3/2}3d_{3/2}$	2	-	4459.4951	0.3513	0.0032911	1.010	β_3
$1s_{1/2}3d_{5/2}$	2	+	$3p_{1/2}3d_{5/2}$	2	-	4459.3354	7.3709	0.0690526	1.010	β_3
$1s_{1/2}3d_{3/2}$	2	+	$3p_{3/2}3d_{3/2}$	3	-	4461.7622	7.8610	0.0734844	1.011	β_{11}
$1s_{1/2}3d_{3/2}$	2	+	$3p_{3/2}3d_{5/2}$	3	-	4459.4995	0.0566	0.0005304	1.010	β_3
$1s_{1/2}3d_{3/2}$	2	+	$3p_{1/2}3d_{5/2}$	3	-	4459.1147	5.1575	0.0483269	1.010	β_3
$1s_{1/2}3d_{5/2}$	2	+	$3p_{3/2}3d_{3/2}$	3	-	4461.8135	4.3114	0.0403002	1.011	β_{11}
$1s_{1/2}3d_{5/2}$	2	+	$3p_{3/2}3d_{5/2}$	3	-	4459.5503	3.2191	0.0301519	1.010	β_3
$1s_{1/2}3d_{5/2}$	2	+	$3p_{1/2}3d_{5/2}$	3	-	4459.1655	5.6249	0.0527026	1.010	β_3
$1s_{1/2}3d_{5/2}$	3	+	$3p_{3/2}3d_{5/2}$	2	-	4463.0850	5.3706	0.0702021	1.012	β_{12}
$1s_{1/2}3d_{5/2}$	3	+	$3p_{1/2}3d_{3/2}$	2	-	4461.6436	0.0112	0.0001461	1.011	β_{11}
$1s_{1/2}3d_{5/2}$	3	+	$3p_{3/2}3d_{3/2}$	2	-	4459.4883	0.4693	0.0061546	1.010	β_3
$1s_{1/2}3d_{5/2}$	3	+	$3p_{1/2}3d_{5/2}$	2	-	4459.3291	0.8884	0.0116512	1.010	β_3
$1s_{1/2}3d_{5/2}$	3	+	$3p_{3/2}3d_{3/2}$	3	-	4461.8071	0.6905	0.0090357	1.011	β_{11}
$1s_{1/2}3d_{5/2}$	3	+	$3p_{3/2}3d_{5/2}$	3	-	4459.5439	6.9946	0.0917212	1.010	β_3
$1s_{1/2}3d_{5/2}$	3	+	$3p_{1/2}3d_{5/2}$	3	-	4459.1592	1.6934	0.0222122	1.010	β_3
$1s_{1/2}3d_{5/2}$	3	+	$3p_{3/2}3d_{5/2}$	4	-	4461.9878	12.0206	0.1572843	1.011	β_{11}

TABLE II. Each of the eigenvalues and their intensities for the diagram line of Sc Kβ as shown in the first panel of figure 3. The provenance of the eigenvalues is given in terms of initial and final leading configuration in terms of hole states, total angular momentum J number, and P, parity. Also given are the Einstein A coefficient as calculated in the length gauge, and the ratio of the value as calculated in the length and velocity gauges which gives a strong indication of convergence.

C. Convergence Criteria

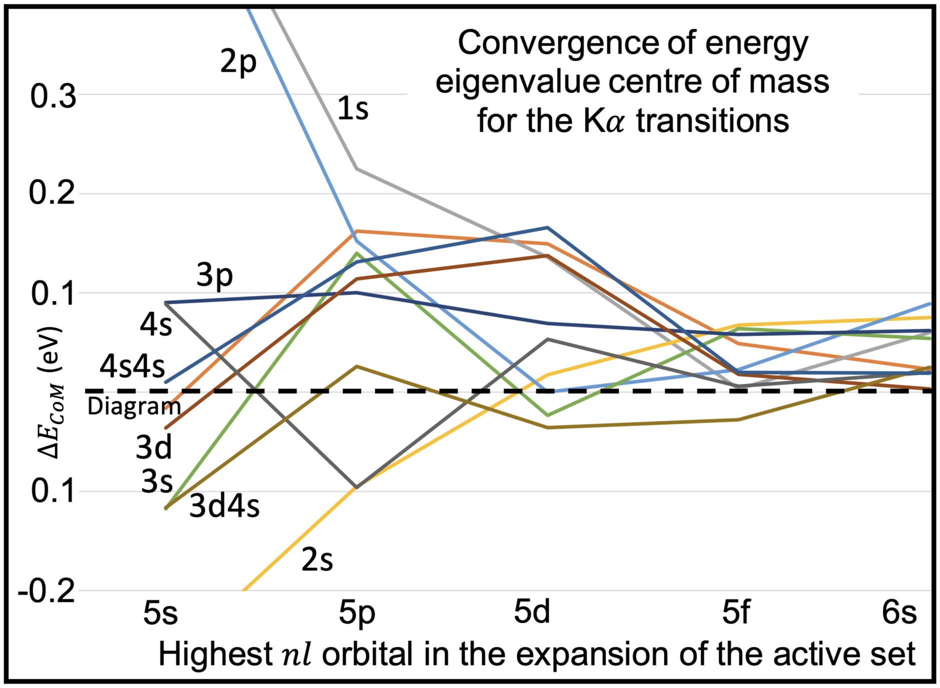

FIG. 1. The energy shift, ΔE_{CoM}, of the centre of mass for Kα energy eigenvalue spectra. In the equation, $\Delta E_{CoM}(nl) = E_{CoM}(nl) - E_{CoM}(n_{-}l_{-})$, the nl value represents the x-axis as the orbital that the active set has been expanded to, $n_{-}l_{-}$ represents the previous level. The values are presented in Table III.

Kα Transition	Energy shift ΔE_{CoM} (eV) for the nl expansion				
	5s	5p	5d	5f	6s
Diagram	-0.016	0.162	0.149	0.049	0.023
1s	0.591	0.225	0.136	0.003	0.060
2s	-0.273	-0.095	0.018	0.067	0.075
2p	0.563	0.152	0.000	0.023	0.089
3s	-0.118	0.140	-0.023	0.064	0.054
3p	0.090	0.100	0.069	0.058	0.062
3d	-0.036	0.114	0.138	0.018	0.003
4s	0.089	-0.096	0.053	0.006	0.020
3d4s	-0.116	0.026	-0.036	-0.028	0.025
4s4s	0.010	0.131	0.166	0.020	0.019

TABLE III. Kα Centre of mass energy convergence. The change in the centre of mass energy eigenvalue for the Kα transitions as the active set is expanded from the 5s to the 6s level. These values are plotted in Fig. 1.

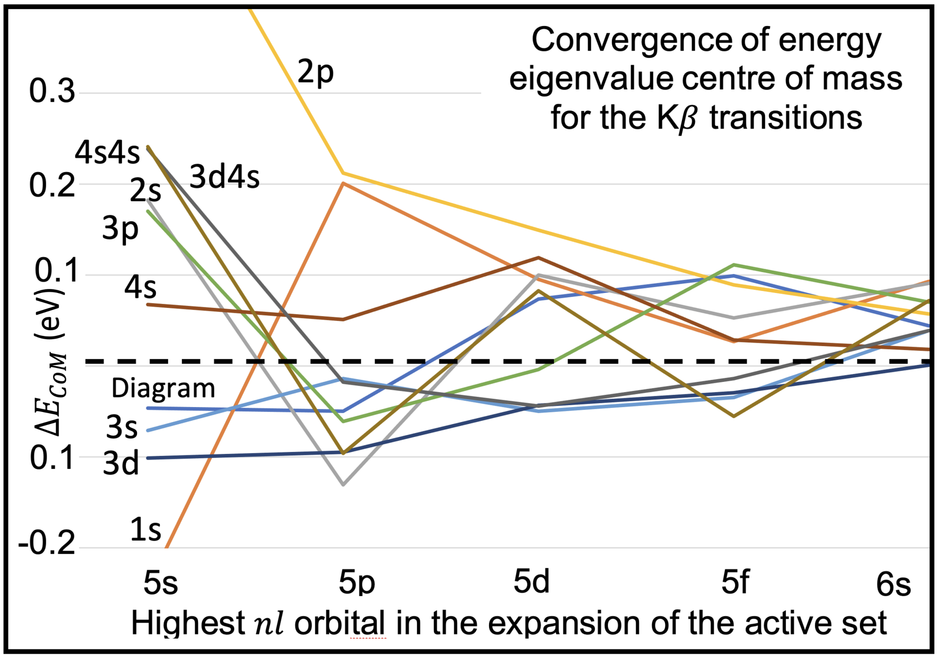

FIG. 2. Kβ Centre of mass energy convergence (Table IV).

Kβ Transition	Energy shift ΔE_{CoM} (eV) for the nl expansion				
	5s	5p	5d	5f	6s
Diagram	-0.046	-0.050	0.073	0.099	0.044
1s	-0.243	0.201	0.095	0.027	0.093
2s	0.183	-0.131	0.100	0.053	0.091
2p	0.589	0.212	0.149	0.089	0.057
3s	-0.071	-0.014	-0.050	-0.035	0.039
3p	0.170	-0.061	-0.004	0.111	0.070
3d	-0.101	-0.095	-0.043	-0.029	0.001
4s	0.068	0.051	0.119	0.029	0.018
3d4s	0.239	-0.018	-0.044	-0.014	0.039
4s4s	0.241	-0.096	0.083	-0.055	0.072

TABLE IV. Kα Centre of mass energy convergence. The change in the centre of mass energy eigenvalue for the Kα transitions as the active set is expanded from the $5s$ to the $6s$ level. These values are plotted in Fig. 2.

Kα Transition	Energy shift ΔE_{peak} (eV) for the nl expansion				
	5s	5p	5d	5f	6s
Diagram	0.056	-0.045	0.025	0.008	-0.003
1s	0.426	0.310	0.086	0.005	0.017
2s	-0.273	-0.095	0.018	0.067	-0.005
2p	0.563	0.152	0.000	0.023	0.009
3s	-0.118	0.140	-0.023	0.064	0.004
3p	0.090	0.100	0.069	0.058	-0.009
3d	-0.036	0.114	0.138	0.018	0.003
4s	0.089	-0.096	0.053	0.093	0.006
3d4s	0.043	0.029	0.076	0.016	0.033
4s4s	0.102	0.144	0.174	0.000	0.003

TABLE V. Kα Peak eigenvalue energy convergence. The change in energy for the peak eigenvalue, greatest g_f, for the Kα transitions as the active set is expanded from the $5s$ to the $6s$ level.

Kβ Transition	Energy shift ΔE_{peak} (eV) for the nl expansion				
	5s	5p	5d	5f	6s
Diagram	-0.016	0.162	0.149	0.049	0.023
1s	0.591	0.225	0.136	0.003	0.060
2s	-0.273	-0.095	0.018	0.067	0.075
2p	0.563	0.152	0.000	0.023	0.089
3s	-0.118	0.140	-0.023	0.064	0.054
3p	0.090	0.100	0.069	0.058	0.062
3d	-0.036	0.114	0.138	0.018	0.003
4s	0.089	-0.096	0.053	0.006	0.020
3d4s	-0.116	0.026	-0.036	-0.028	0.025
4s4s	0.010	0.131	0.166	0.020	0.019

TABLE VI. Kβ Peak eigenvalue energy convergence. The change in energy for the peak eigenvalue, greatest g_f, for the Kβ transitions as the active set is expanded from the $5s$ to the $6s$ level.

Kα Transition	Centre of mass A_L/A_V ratio for the nl expansion level					
	4s	4f	5s	5p	5d	5f	6s
Diagram	1.022	1.022	1.013	1.009	1.009	1.009	1.007
1s	1.031	1.028	1.027	1.026	1.025	1.027	1.024
2s	1.027	1.024	1.022	1.022	1.022	1.019	1.020
2p	1.025	1.028	1.022	1.022	1.021	1.022	1.019
3s	1.021	1.019	1.016	1.014	1.016	1.015	1.014
3p	1.016	1.014	1.011	1.011	1.011	1.011	1.009
3d	1.010	1.010	1.010	1.010	1.010	1.010	1.010
4s	1.018	1.015	1.017	1.012	1.010	1.009	1.008
3d4s	1.014	1.011	1.010	1.010	1.010	1.010	1.008
4s4s	1.025	1.022	1.013	1.012	1.010	1.007	1.007

TABLE VII. Kα Relativistic Gauge Ratio Convergence Centre-of-Mass. The weighted mean ratio of the Einstein coefficients in the length gauge to the velocity gauge, A_L/A_V, weighted by the intensity of the eigenvalue, g_f. The transitions are described as D, for the diagram spectrum, and then nl referencing the shake-off satellite orbitals, and $nlnl$ for the double shake-off satellites.

Kβ Transition	Centre of mass A_L/A_V ratio for the nl expansion level						
	4s	4f	5s	5p	5d	5f	6s
Diagram	1.033	1.026	1.025	1.025	1.025	1.025	1.025
1s	1.042	1.044	1.040	1.040	1.040	1.040	1.038
2s	1.039	1.031	1.030	1.030	1.030	1.030	1.031
2p	1.035	1.031	1.029	1.028	1.028	1.026	1.025
3s	1.027	1.027	1.021	1.015	1.015	1.015	1.014
3p	1.022	1.022	1.020	1.013	1.012	1.012	1.012
3d	1.013	1.013	1.013	1.013	1.013	1.013	1.013
4s	1.029	1.030	1.028	1.027	1.027	1.027	1.027
3d4s	1.025	1.024	1.011	1.011	1.010	1.010	1.010
4s4s	1.030	1.028	1.025	1.025	1.026	1.025	1.025

TABLE VIII. Kβ Relativistic Gauge Ratio Convergence Centre-of-Mass. The weighted mean ratio of the Einstein coefficients in the length gauge to the velocity gauge, A_L/A_V, weighted by the intensity of the eigenvalue, g_f. The transitions are described as D, for the diagram spectrum, and then nl referencing the shake-off satellite orbitals, and $nlnl$ for the double shake-off satellites.

Kα Transition	Peak A_L/A_V ratio for the nl expansion						
	4s	4f	5s	5p	5d	5f	6s
Diagram	1.023	1.023	1.021	1.021	1.021	1.021	
1s	1.012	1.011	1.006	1.008	1.006	1.006	1.006
2s	1.008	1.015	1.011	1.011	1.011	1.011	1.010
2p	1.029	1.026	1.015	1.016	1.011	1.012	1.012
3s	1.018	1.017	1.016	1.014	1.014	1.014	1.011
3p	1.071	1.064	1.029	1.021	1.011	1.006	1.005
3d	1.014	1.012	1.005	1.002	1.001	1.001	1.001
4s	1.017	1.012	1.007	1.007	1.007	1.007	1.007
3d4s	1.015	1.012	1.005	1.002	1.002	1.002	1.002
4s4s	1.033	1.031	1.009	1.002	1.003	1.002	1.002

TABLE IX. Kα Relativistic Gauge Ratio Convergence Peak component. The ratio of the Einstein coefficients in the length gauge to the velocity gauge for the most intense eigenvalue, largest g_f.

Kβ Transition	Peak A_L/A_V ratio for the nl expansion						
	4s	4f	5s	5p	5d	5f	6s
Diagram	1.041	1.023	1.020	1.021	1.021	1.021	
1s	1.043	1.032	1.026	1.024	1.026	1.026	1.025
2s	1.057	1.036	1.030	1.030	1.030	1.029	1.029
2p	1.041	1.026	1.013	1.012	1.012	1.012	1.011
3s	1.044	1.029	1.009	1.007	1.007	1.004	1.005
3p	1.031	1.024	1.009	1.010	1.009	1.010	1.010
3d	1.015	1.012	1.006	1.009	1.008	1.007	1.007
4s	1.047	1.038	1.025	1.028	1.025	1.025	1.021
3d4s	1.018	1.012	1.007	1.008	1.007	1.007	1.006
4s4s	1.031	1.031	1.020	1.019	1.019	1.019	1.018

TABLE X. Kβ Relativistic Gauge Ratio Convergence Peak component. The ratio of the Einstein coefficients in the length gauge to the velocity gauge for the most intense eigenvalue, largest g_f.

Kα Transition	Weighted mean g_f shift for the nl expansion 4f	5s	5p	5d	5f	6s
Diagram	-0.12	0.02	0.01	0.00	-0.01	0.01
1s	0.08	-0.03	0.00	0.03	0.01	-0.02
2s	-0.11	0.03	0.01	0.01	0.01	0.01
2p	0.06	0.00	0.00	0.02	-0.02	0.01
3s	0.16	-0.07	0.00	0.00	0.03	0.00
3p	0.27	0.02	0.02	0.01	0.00	0.00
3d	-0.01	-0.04	0.00	0.00	0.00	-0.01
4s	0.06	0.01	0.04	0.00	0.03	0.01
3d4s	0.03	0.02	0.03	0.00	-0.02	0.00
4s4s	-0.10	-0.03	0.00	0.08	0.01	-0.02

TABLE XI. Kα convergence of the relativistic length gauge. The weighted mean change in the intensity factor, g_f (A_L), for the Kα transitions as the active set is expanded from the $4f$ to the $6s$ level.

Kβ Transition	Weighted mean g_f shift for the nl expansion 4f	5s	5p	5d	5f	6s
Diagram	0.11	-0.04	0.04	0.02	-0.01	0.01
1s	-0.18	0.10	-0.05	0.04	0.01	0.00
2s	0.14	-0.04	0.03	0.01	0.03	-0.02
2p	-0.20	0.08	0.03	0.01	-0.03	0.00
3s	0.21	0.04	0.08	0.00	0.01	0.00
3p	-0.13	0.01	-0.06	0.00	-0.04	0.01
3d	0.05	-0.02	0.00	0.01	0.00	0.01
4s	0.16	0.00	0.06	0.02	0.02	0.00
3d4s	0.07	0.02	-0.03	0.03	0.01	-0.03
4s4s	-0.15	0.04	-0.02	0.02	-0.04	-0.01

TABLE XII. Kβ convergence of the relativistic length gauge. The weighted mean change in the intensity factor, g_f (A_L), for the Kβ transitions as the active set is expanded from the $4f$ to the $6s$ level.

Kα Transition	Weighted mean A_L shift for the nl expansion 4f	5s	5p	5d	5f	6s
Diagram	0.02	-0.05	-0.01	-0.03	0.00	-0.01
1s	-0.15	-0.03	0.01	-0.02	-0.02	0.00
2s	0.05	-0.08	0.03	-0.01	0.02	0.00
2p	0.04	0.08	0.01	0.00	0.01	-0.01
3s	0.07	-0.08	0.00	-0.02	0.00	0.00
3p	0.09	-0.07	0.00	0.00	-0.02	0.01
3d	0.12	0.04	-0.03	-0.03	0.02	0.01
4s	0.03	0.01	-0.03	-0.02	0.00	0.01
3d4s	0.04	-0.05	0.02	0.03	0.00	0.00
4s4s	-0.05	0.00	-0.01	-0.01	-0.01	0.00

TABLE XIII. Kα convergence of the relativistic length gauge. The weighted mean change in the intensity factor, A_L, for the Kα transitions as the active set is expanded from the $4f$ to the $6s$ level.

Kβ Transition	Weighted mean A_L shift for the nl expansion 4f	5s	5p	5d	5f	6s
Diagram	-0.15	0.03	0.03	0.02	0.03	0.01
1s	-0.06	-0.07	-0.01	0.03	-0.01	0.00
2s	-0.12	-0.06	0.02	0.02	-0.01	0.00
2p	-0.07	-0.04	0.00	-0.02	0.03	-0.01
3s	0.15	-0.05	-0.03	0.02	-0.02	0.00
3p	0.13	0.05	0.03	-0.03	0.00	0.01
3d	0.04	0.08	0.02	0.03	-0.02	0.01
4s	0.02	0.06	0.00	-0.03	0.03	-0.01
3d4s	-0.01	0.03	0.03	0.02	-0.01	-0.01
4s4s	0.14	0.08	0.00	0.03	-0.01	-0.01

TABLE XIV. Kβ convergence of the relativistic length gauge. The weighted mean change in the intensity factor, A_L, for the Kβ transitions as the active set is expanded from the $4f$ to the $6s$ level.