Table S1: Wavelengths (λ , in Å) in vacuum, weighted oscillator strengths (gf, dimensionless), line strengths (S, in atomic units) and transition rates (A, in s^{-1}) for E1 transitions from the present (RCI and MBPT) and previous results of Siegel et al. [17], Froese Fischer et al. [20], Liang et al. [22] and NIST ASD [48] for Ar^{7+}. The estimated uncertainty (Unc.) in the A values are presented in the last column. The results listed here are in length gauge.

Upper level	**Lower level**	λ **[RCI]**	gf **[RCI]**	gf **Ref. [17]**	S **[RCI]**	S **[MBPT]**	S **Ref. [48]**	S **Ref. [20]**	S **Ref. [22]**	A **[RCI]**	**Unc.**
$3d\ ^2D_{3/2}$	$3p\ ^2P_{1/2}$	517.65	1.013e+00	1.019e+00	1.726e+00	1.810e+00	1.700e+00	1.726e+00	1.822e+00	6.304e+09	B+
$3d\ ^2D_{3/2}$	$3p\ ^2P_{3/2}$	525.03	2.002e−01	2.015e−01	3.461e−01	3.627e−01	3.500e−01	3.462e−01	3.645e−01	1.211e+09	B+
$3d\ ^2D_{5/2}$	$3p\ ^2P_{3/2}$	524.72	1.803e+00	1.816e+00	3.115e+00	3.265e+00	3.100e+00	3.114e+00	3.294e+00	7.280e+09	B+
$3p\ ^2P_{1/2}$	$3s\ ^2S_{1/2}$	714.53	3.685e−01	3.728e−01	8.668e−01	9.122e−01	8.600e−01	8.664e−01	9.228e−01	2.407e+09	B+
$3p\ ^2P_{3/2}$	$3s\ ^2S_{1/2}$	700.94	7.533e−01	7.622e−01	1.738e+00	1.829e+00	1.730e+00	1.738e+00	1.847e+00	2.557e+09	B+
$4d\ ^2D_{3/2}$	$3p\ ^2P_{1/2}$	179.09	2.650e−01	2.620e−01	1.563e−01	1.557e−01		1.583e−01	1.489e−01	1.378e+10	B+
$4d\ ^2D_{3/2}$	$4p\ ^2P_{1/2}$	1440.66	1.608e+00	1.604e+00	7.628e+00	7.703e+00	8.900e+00	7.642e+00	7.736e+00	1.292e+09	B+
$4d\ ^2D_{3/2}$	$3p\ ^2P_{3/2}$	179.96	5.459e−02	5.404e−02	3.234e−02	3.225e−02		3.230e−02	3.076e−02	2.811e+09	C+
$4d\ ^2D_{3/2}$	$4p\ ^2P_{3/2}$	1461.94	3.179e−01	3.170e−01	1.530e+00	1.545e+00		1.529e+00	1.554e+00	2.480e+08	B+
$4d\ ^2D_{5/2}$	$3p\ ^2P_{3/2}$	179.94	4.915e−01	4.848e−01	2.912e−01	2.895e−01		2.907e−01	2.770e−01	1.688e+10	B+
$4d\ ^2D_{5/2}$	$4p\ ^2P_{3/2}$	1460.76	2.862e+00	2.856e+00	1.376e+01	1.390e+01	1.600e+01	1.376e+01	1.396e+01	1.491e+09	B+
$4f\ ^2F_{5/2}$	$3d\ ^2D_{3/2}$	259.91	3.507e+00		3.001e+00	3.129e+00	3.180e+00	3.002e+00	3.120e+00	5.772e+10	B+
$4f\ ^2F_{5/2}$	$4d\ ^2D_{3/2}$	5116.30	5.894e−01		9.927e+00	9.923e+00			9.968e+00	2.503e+07	C+
$4f\ ^2F_{5/2}$	$3d\ ^2D_{5/2}$	259.98	2.506e−01		2.145e−01	2.236e−01		2.145e−01	2.230e−01	4.122e+09	B+
$4f\ ^2F_{7/2}$	$3d\ ^2D_{5/2}$	259.96	5.012e+00		4.289e+00	4.472e+00	4.530e+00	4.291e+00	4.466e+00	6.184e+10	B+
$4f\ ^2F_{7/2}$	$4d\ ^2D_{5/2}$	5123.02	8.408e−01		1.418e+01	1.418e+01			1.425e+01	2.671e+07	C+
$4p\ ^2P_{1/2}$	$3s\ ^2S_{1/2}$	159.00	8.540e−02	8.298e−02	4.470e−02	4.240e−02	4.420e−02	4.521e−02	4.027e−02	1.127e+10	B
$4p\ ^2P_{1/2}$	$4s\ ^2S_{1/2}$	1917.54	5.600e−01	5.642e−01	3.535e+00	3.572e+00		3.550e+00	3.598e+00	5.079e+08	B+
$4p\ ^2P_{1/2}$	$3d\ ^2D_{3/2}$	338.07	2.649e−01	2.630e−01	2.949e−01	2.947e−01	4.200e−01	2.953e−01	2.920e−01	7.731e+09	B+
$4p\ ^2P_{3/2}$	$3s\ ^2S_{1/2}$	158.75	1.646e−01	1.595e−01	8.600e−02	8.144e−02	8.700e−02	8.726e−02	7.811e−02	1.089e+10	B
$4p\ ^2P_{3/2}$	$4s\ ^2S_{1/2}$	1881.09	1.143e+00	1.151e+00	7.076e+00	7.150e+00		7.096e+00	7.203e+00	5.385e+08	B+
$4p\ ^2P_{3/2}$	$3d\ ^2D_{3/2}$	336.92	5.219e−02	5.176e−02	5.789e−02	5.788e−02		5.798e−02	5.739e−02	7.667e+08	B
$4p\ ^2P_{3/2}$	$3d\ ^2D_{5/2}$	337.05	4.710e−01	4.666e−01	5.226e−01	5.214e−01	7.600e−01	5.233e−01	5.177e−01	6.914e+09	B+
$4s\ ^2S_{1/2}$	$3p\ ^2P_{1/2}$	228.92	1.757e−01	1.752e−01	1.324e−01	1.331e−01	1.340e−01	1.333e−01	1.283e−01	1.118e+10	B
$4s\ ^2S_{1/2}$	$3p\ ^2P_{3/2}$	230.36	3.589e−01	3.601e−01	2.722e−01	2.734e−01	2.680e−01	2.713e−01	2.647e−01	2.256e+10	B+
$5d\ ^2D_{3/2}$	$3p\ ^2P_{1/2}$	137.69	1.124e−01	1.118e−01	5.097e−02	5.331e−02			4.879e−02	9.889e+09	B
$5d\ ^2D_{3/2}$	$4p\ ^2P_{1/2}$	421.42	1.760e−01	1.782e−01	2.442e−01	2.528e−01			2.364e−01	1.653e+09	B+
$5d\ ^2D_{3/2}$	$5p\ ^2P_{1/2}$	3024.45	2.115e+00	2.104e+00	2.106e+01	2.111e+01			2.125e+01	3.855e+08	C+
$5d\ ^2D_{3/2}$	$3p\ ^2P_{3/2}$	138.21	2.294e−02	2.285e−02	1.044e−02	1.092e−02			1.006e−02	2.003e+09	C+
$5d\ ^2D_{3/2}$	$4p\ ^2P_{3/2}$	423.22	3.672e−02	3.724e−02	5.116e−02	5.290e−02			4.980e−02	3.419e+08	B
$5d\ ^2D_{3/2}$	$5p\ ^2P_{3/2}$	3069.39	4.180e−01	4.160e−01	4.224e+00	4.234e+00			4.256e+00	7.398e+07	C+
$5d\ ^2D_{3/2}$	$4f\ ^2F_{5/2}$	674.14	1.309e−01		2.905e−01	2.950e−01			2.804e−01	4.804e+08	B+
$5d\ ^2D_{5/2}$	$3p\ ^2P_{3/2}$	138.20	2.073e−01	2.052e−01	9.432e−02	9.805e−02			9.052e−02	1.207e+10	B
$5d\ ^2D_{5/2}$	$4p\ ^2P_{3/2}$	423.17	3.308e−01	3.335e−01	4.609e−01	4.743e−01			4.447e−01	2.054e+09	B+
$5d\ ^2D_{5/2}$	$5p\ ^2P_{3/2}$	3066.67	3.763e+00	3.856e+00	3.799e+01	3.811e+01			3.831e+01	4.448e+08	C+
$5d\ ^2D_{5/2}$	$4f\ ^2F_{5/2}$	674.01	9.345e−03		2.074e−02	2.101e−02			1.997e−02	2.287e+07	C+

Table S1 – continued from previous page

Upper level	Lower level	λ [RCI]	gf [RCI]	gf Ref. [17]	S [RCI]	S [MBPT]	S Ref. [48]	S Ref. [20]	S Ref. [22]	A [RCI]	Unc.
$5d\ ^2D_{5/2}$	$4f\ ^2F_{7/2}$	674.14	1.871e−01		4.153e−01	4.208e−01			4.005e−01	4.577e+08	B+
$5f\ ^2F_{5/2}$	$3d\ ^2D_{3/2}$	184.09	6.573e−01		3.984e−01	4.282e−01	4.100e−01		4.173e−01	2.156e+10	B
$5f\ ^2F_{5/2}$	$4d\ ^2D_{3/2}$	561.79	2.671e+00	2.687e+00	4.939e+00	5.084e+00			5.060e+00	9.408e+09	B+
$5f\ ^2F_{5/2}$	$5d\ ^2D_{3/2}$	9880.92	1.073e+00		3.491e+01	3.484e+01			3.507e+01	1.222e+07	D+
$5f\ ^2F_{5/2}$	$3d\ ^2D_{5/2}$	184.13	4.703e−02		2.851e−02	3.058e−02			2.987e−02	1.542e+09	C+
$5f\ ^2F_{5/2}$	$4d\ ^2D_{5/2}$	561.96	1.911e−01	1.922e−01	3.535e−01	3.636e−01			3.625e−01	6.726e+08	B+
$5f\ ^2F_{7/2}$	$3d\ ^2D_{5/2}$	184.12	9.408e−01		5.702e−01	6.118e−01	5.900e−01		5.974e−01	2.314e+10	B
$5f\ ^2F_{7/2}$	$4d\ ^2D_{5/2}$	561.92	3.820e+00	3.842e+00	7.066e+00	7.269e+00			7.229e+00	1.009e+10	B+
$5f\ ^2F_{7/2}$	$5d\ ^2D_{5/2}$	9894.52	1.531e+00		4.986e+01	4.977e+01			4.991e+01	1.304e+07	D+
$5g\ ^2G_{7/2}$	$4f\ ^2F_{5/2}$	628.17	7.980e+00		1.650e+01	1.670e+01			1.670e+01	1.686e+10	B+
$5g\ ^2G_{7/2}$	$4f\ ^2F_{7/2}$	628.29	2.956e−01		6.114e−01	6.186e−01			6.178e−01	6.243e+08	B+
$5g\ ^2G_{9/2}$	$4f\ ^2F_{7/2}$	628.25	1.035e+01		2.140e+01	2.165e+01			2.162e+01	1.748e+10	B+
$5p\ ^2P_{1/2}$	$3s\ ^2S_{1/2}$	120.03	2.999e−02	2.926e−02	1.185e−02	1.176e−02	9.900e−03		1.041e−02	6.942e+09	C+
$5p\ ^2P_{1/2}$	$4s\ ^2S_{1/2}$	390.04	7.942e−02	7.834e−02	1.020e−01	1.013e−01			9.638e−02	1.741e+09	B
$5p\ ^2P_{1/2}$	$5s\ ^2S_{1/2}$	4011.45	7.339e−01	7.380e−01	9.693e+00	9.714e+00			9.817e+00	1.521e+08	C+
$5p\ ^2P_{1/2}$	$3d\ ^2D_{3/2}$	199.99	3.507e−02	3.503e−02	2.309e−02	2.370e−02			2.201e−02	2.925e+09	C+
$5p\ ^2P_{1/2}$	$4d\ ^2D_{3/2}$	741.74	5.536e−01	5.528e−01	1.352e+00	1.368e+00			1.355e+00	3.356e+09	B+
$5p\ ^2P_{3/2}$	$3s\ ^2S_{1/2}$	119.96	5.830e−02	5.680e−02	2.302e−02	2.282e−02	2.100e−02		2.040e−02	6.757e+09	C+
$5p\ ^2P_{3/2}$	$4s\ ^2S_{1/2}$	389.31	1.520e−01	1.496e−01	1.948e−01	1.935e−01			1.859e−01	1.673e+09	B+
$5p\ ^2P_{3/2}$	$5s\ ^2S_{1/2}$	3935.02	1.496e+00	1.504e+00	1.939e+01	1.943e+01			1.961e+01	1.612e+08	C+
$5p\ ^2P_{3/2}$	$3d\ ^2D_{3/2}$	199.80	6.953e−03	6.940e−03	4.573e−03	4.695e−03			4.357e−03	2.904e+08	C+
$5p\ ^2P_{3/2}$	$4d\ ^2D_{3/2}$	739.08	1.091e−01	1.088e−01	2.654e−01	2.686e−01			2.667e−01	3.329e+08	B+
$5p\ ^2P_{3/2}$	$3d\ ^2D_{5/2}$	199.84	6.320e−02	6.252e−02	4.158e−02	4.224e−02			3.945e−02	2.639e+09	B
$5p\ ^2P_{3/2}$	$4d\ ^2D_{5/2}$	739.39	9.845e−01	9.816e−01	2.396e+00	2.421e+00			2.405e+00	3.003e+09	B+
$5s\ ^2S_{1/2}$	$3p\ ^2P_{1/2}$	149.64	3.232e−02	3.216e−02	1.592e−02	1.641e−02			1.468e−02	4.815e+09	C+
$5s\ ^2S_{1/2}$	$4p\ ^2P_{1/2}$	557.72	2.973e−01	2.990e−01	5.459e−01	5.597e−01			5.446e−01	3.188e+09	B+
$5s\ ^2S_{1/2}$	$3p\ ^2P_{3/2}$	150.25	6.564e−02	6.540e−02	3.247e−02	3.343e−02			3.031e−02	9.698e+09	C+
$5s\ ^2S_{1/2}$	$4p\ ^2P_{3/2}$	560.88	6.062e−01	6.100e−01	1.119e+00	1.147e+00			1.115e+00	6.426e+09	B+
$6d\ ^2D_{3/2}$	$3p\ ^2P_{1/2}$	122.45	5.614e−02		2.263e−02	2.534e−02			2.063e−02	6.243e+09	C+
$6d\ ^2D_{3/2}$	$4p\ ^2P_{1/2}$	305.17	8.384e−02		8.423e−02	9.187e−02			7.894e−02	1.501e+09	B
$6d\ ^2D_{3/2}$	$5p\ ^2P_{1/2}$	810.03	1.346e−01		3.590e−01	3.854e−01			3.445e−01	3.421e+08	B
$6d\ ^2D_{3/2}$	$6p\ ^2P_{1/2}$	5445.62	2.591e+00		4.645e+01	4.641e+01			4.691e+01	1.457e+08	C
$6d\ ^2D_{3/2}$	$3p\ ^2P_{3/2}$	122.86	1.142e−02		4.619e−03	5.166e−03			4.386e−03	1.262e+09	C+
$6d\ ^2D_{3/2}$	$4p\ ^2P_{3/2}$	306.12	1.726e−02		1.740e−02	1.894e−02			1.678e−02	3.072e+08	C+
$6d\ ^2D_{3/2}$	$5p\ ^2P_{3/2}$	813.22	2.837e−02		7.596e−02	8.137e−02			7.424e−02	7.154e+07	B
$6d\ ^2D_{3/2}$	$6p\ ^2P_{3/2}$	5526.63	5.122e−01		9.320e+00	9.310e+00			9.360e+00	2.797e+07	C
$6d\ ^2D_{3/2}$	$4f\ ^2F_{5/2}$	418.89	2.112e−02		2.913e−02	3.349e−02			2.807e−02	2.007e+08	C+
$6d\ ^2D_{3/2}$	$5f\ ^2F_{5/2}$	1245.82	3.171e−01		1.301e+00	1.324e+00			1.267e+00	3.407e+08	B+
$6d\ ^2D_{5/2}$	$3p\ ^2P_{3/2}$	122.86	1.041e−01		4.209e−02	4.640e−02			3.964e−02	7.664e+09	C+

Table S1 – continued from previous page

Upper level	Lower level	λ [RCI]	gf [RCI]	gf Ref. [17]	S [RCI]	S [MBPT]	S Ref. [48]	S Ref. [20]	S Ref. [22]	A [RCI]	Unc.
$6d\ ^2D_{5/2}$	$4p\ ^2P_{3/2}$	306.10	1.569e−01		1.581e−01	1.700e−01			1.511e−01	1.862e+09	B
$6d\ ^2D_{5/2}$	$5p\ ^2P_{3/2}$	813.12	2.569e−01		6.878e−01	7.287e−01			6.647e−01	4.320e+08	B+
$6d\ ^2D_{5/2}$	$6p\ ^2P_{3/2}$	5521.98	4.606e+00		8.373e+01	8.379e+01			8.432e+01	1.679e+08	C
$6d\ ^2D_{5/2}$	$4f\ ^2F_{5/2}$	418.86	1.519e−03		2.094e−03	2.386e−03			2.004e−03	9.624e+06	C+
$6d\ ^2D_{5/2}$	$5f\ ^2F_{5/2}$	1245.59	2.272e−02		9.317e−02	9.433e−02			9.005e−02	1.628e+07	B
$6d\ ^2D_{5/2}$	$4f\ ^2F_{7/2}$	418.92	3.041e−02		4.193e−02	4.776e−02			4.014e−02	1.926e+08	C+
$6d\ ^2D_{5/2}$	$5f\ ^2F_{7/2}$	1245.82	4.549e−01		1.866e+00	1.889e+00			1.808e+00	3.259e+08	B+
$6f\ ^2F_{5/2}$	$3d\ ^2D_{3/2}$	158.89	2.400e−01		1.256e−01	1.415e−01			1.333e−01	1.057e+10	C+
$6f\ ^2F_{5/2}$	$4d\ ^2D_{3/2}$	378.59	6.845e−01		8.532e−01	9.002e−01			8.714e−01	5.310e+09	B+
$6f\ ^2F_{5/2}$	$5d\ ^2D_{3/2}$	1038.89	2.291e+00		7.837e+00	8.111e+00			8.040e+00	2.360e+09	B+
$6f\ ^2F_{5/2}$	$6d\ ^2D_{3/2}$	17042.46	1.501e+00		8.424e+01	8.377e+01			8.429e+01	5.747e+06	E
$6f\ ^2F_{5/2}$	$3d\ ^2D_{5/2}$	158.92	1.736e−02		9.082e−03	1.010e−02			9.556e−03	7.641e+08	C+
$6f\ ^2F_{5/2}$	$4d\ ^2D_{5/2}$	378.67	4.933e−02		6.149e−02	6.432e−02			6.241e−02	3.824e+08	B
$6f\ ^2F_{5/2}$	$5d\ ^2D_{5/2}$	1039.20	1.646e−01		5.633e−01	5.804e−01			5.752e−01	1.695e+08	B+
$6f\ ^2F_{5/2}$	$5g\ ^2G_{7/2}$	1170.93	6.287e−02		2.423e−01	2.388e−01			2.350e−01	5.097e+07	B
$6f\ ^2F_{7/2}$	$3d\ ^2D_{5/2}$	158.92	3.473e−01		1.817e−01	2.021e−01			1.908e−01	1.147e+10	C+
$6f\ ^2F_{7/2}$	$4d\ ^2D_{5/2}$	378.66	9.864e−01		1.230e+00	1.286e+00			1.248e+00	5.736e+09	B+
$6f\ ^2F_{7/2}$	$5d\ ^2D_{5/2}$	1039.11	3.291e+00		1.126e+01	1.160e+01			1.150e+01	2.541e+09	B+
$6f\ ^2F_{7/2}$	$6d\ ^2D_{5/2}$	17061.77	2.136e+00		1.200e+02	1.197e+02			1.203e+02	6.119e+06	E
$6f\ ^2F_{7/2}$	$5g\ ^2G_{9/2}$	1170.95	8.144e−02		3.139e−01	3.094e−01			3.045e−01	4.952e+07	B
$6g\ ^2G_{7/2}$	$4f\ ^2F_{5/2}$	408.05	1.093e+00		1.468e+00	1.491e+00			1.482e+00	5.472e+09	B+
$6g\ ^2G_{7/2}$	$5f\ ^2F_{5/2}$	1154.62	6.983e+00		2.654e+01	2.688e+01			2.680e+01	4.368e+09	B+
$6g\ ^2G_{7/2}$	$4f\ ^2F_{7/2}$	408.10	4.046e−02		5.435e−02	5.521e−02			5.483e−02	2.025e+08	B
$6g\ ^2G_{7/2}$	$5f\ ^2F_{7/2}$	1154.82	2.587e−01		9.836e−01	9.960e−01			9.941e−01	1.617e+08	B+
$6g\ ^2G_{9/2}$	$4f\ ^2F_{7/2}$	408.09	1.416e+00		1.903e+00	1.933e+00			1.921e+00	5.673e+09	B+
$6g\ ^2G_{9/2}$	$5f\ ^2F_{7/2}$	1154.75	9.054e+00		3.442e+01	3.485e+01			3.474e+01	4.529e+09	B+
$6h\ ^2H_{11/2}$	$5g\ ^2G_{9/2}$	1163.84	1.642e+01		6.292e+01	6.311e+01			6.309e+01	6.739e+09	B+
$6h\ ^2H_{9/2}$	$5g\ ^2G_{7/2}$	1163.76	1.338e+01		5.127e+01	5.142e+01			5.139e+01	6.590e+09	B+
$6h\ ^2H_{9/2}$	$5g\ ^2G_{9/2}$	1163.89	3.041e−01		1.165e+00	1.169e+00			1.170e+00	1.497e+08	B+
$6p\ ^2P_{1/2}$	$3s\ ^2S_{1/2}$	106.58	1.422e−02		4.991e−03	5.267e−03			4.024e−03	4.176e+09	C+
$6p\ ^2P_{1/2}$	$4s\ ^2S_{1/2}$	276.65	2.933e−02		2.671e−02	2.799e−02			2.385e−02	1.278e+09	C+
$6p\ ^2P_{1/2}$	$5s\ ^2S_{1/2}$	769.13	7.931e−02		2.008e−01	2.029e−01			1.887e−01	4.471e+08	B
$6p\ ^2P_{1/2}$	$6s\ ^2S_{1/2}$	7252.49	9.015e−01		2.152e+01	2.151e+01			2.178e+01	5.716e+07	D+
$6p\ ^2P_{1/2}$	$3d\ ^2D_{3/2}$	165.26	1.183e−02		6.438e−03	7.158e−03			5.993e−03	1.445e+09	C+
$6p\ ^2P_{1/2}$	$4d\ ^2D_{3/2}$	416.83	7.629e−02		1.047e−01	1.113e−01			1.029e−01	1.465e+09	B
$6p\ ^2P_{1/2}$	$5d\ ^2D_{3/2}$	1388.40	8.570e−01		3.917e+00	3.969e+00			3.929e+00	1.483e+09	B+
$6p\ ^2P_{3/2}$	$3s\ ^2S_{1/2}$	106.55	2.774e−02		9.732e−03	1.026e−02			7.969e−03	4.075e+09	C+
$6p\ ^2P_{3/2}$	$4s\ ^2S_{1/2}$	276.44	5.672e−02		5.162e−02	5.411e−02			4.676e−02	1.238e+09	B
$6p\ ^2P_{3/2}$	$5s\ ^2S_{1/2}$	767.54	1.511e−01		3.819e−01	3.861e−01			3.626e−01	4.278e+08	B+

Table S1 – continued from previous page

Upper level	Lower level	λ [RCI]	gf [RCI]	gf Ref. [17]	S [RCI]	S [MBPT]	S Ref. [48]	S Ref. [20]	S Ref. [22]	A [RCI]	Unc.
$6p\ ^2P_{3/2}$	$6s\ ^2S_{1/2}$	7113.61	1.837e+00		4.303e+01	4.299e+01			4.349e+01	6.055e+07	D+
$6p\ ^2P_{3/2}$	$3d\ ^2D_{3/2}$	165.18	2.347e−03		1.276e−03	1.422e−03			1.197e−03	1.434e+08	C
$6p\ ^2P_{3/2}$	$4d\ ^2D_{3/2}$	416.36	1.513e−02		2.073e−02	2.205e−02			2.066e−02	1.455e+08	C+
$6p\ ^2P_{3/2}$	$5d\ ^2D_{3/2}$	1383.23	1.689e−01		7.691e−01	7.797e−01			7.727e−01	1.472e+08	B
$6p\ ^2P_{3/2}$	$3d\ ^2D_{5/2}$	165.21	2.175e−02		1.183e−02	1.277e−02			1.080e−02	1.329e+09	C+
$6p\ ^2P_{3/2}$	$4d\ ^2D_{5/2}$	416.46	1.378e−01		1.889e−01	1.985e−01			1.866e−01	1.325e+09	B+
$6p\ ^2P_{3/2}$	$5d\ ^2D_{5/2}$	1383.79	1.526e+00		6.952e+00	7.029e+00			7.002e+00	1.329e+09	B+
$6s\ ^2S_{1/2}$	$3p\ ^2P_{1/2}$	127.47	1.235e−02		5.183e−03	5.699e−03			4.491e−03	2.535e+09	C+
$6s\ ^2S_{1/2}$	$4p\ ^2P_{1/2}$	338.37	5.285e−02		5.887e−02	6.255e−02			5.658e−02	1.539e+09	B
$6s\ ^2S_{1/2}$	$5p\ ^2P_{1/2}$	1095.28	4.217e−01		1.521e+00	1.566e+00			1.512e+00	1.172e+09	B+
$6s\ ^2S_{1/2}$	$3p\ ^2P_{3/2}$	127.91	2.504e−02		1.055e−02	1.156e−02			9.487e−03	5.105e+09	C+
$6s\ ^2S_{1/2}$	$4p\ ^2P_{3/2}$	339.53	1.071e−01		1.197e−01	1.270e−01			1.162e−01	3.098e+09	B
$6s\ ^2S_{1/2}$	$5p\ ^2P_{3/2}$	1101.12	8.588e−01		3.113e+00	3.203e+00			3.107e+00	2.362e+09	B+
$7d\ ^2D_{3/2}$	$3p\ ^2P_{1/2}$	114.84	3.530e−02		1.335e−02	1.489e−02				4.463e+09	C+
$7d\ ^2D_{3/2}$	$4p\ ^2P_{1/2}$	261.92	4.976e−02		4.291e−02	4.574e−02				1.210e+09	B
$7d\ ^2D_{3/2}$	$5p\ ^2P_{1/2}$	563.18	8.030e−02		1.489e−01	1.452e−01				4.222e+08	B
$7d\ ^2D_{3/2}$	$6p\ ^2P_{1/2}$	1379.82	1.265e−01		5.746e−01	5.643e−01				1.108e+08	B
$7d\ ^2D_{3/2}$	$7p\ ^2P_{1/2}$	8883.27	2.876e+00		8.410e+01	8.889e+01				6.077e+07	D+
$7d\ ^2D_{3/2}$	$3p\ ^2P_{3/2}$	115.20	7.038e−03		2.669e−03	3.025e−03				8.844e+08	C+
$7d\ ^2D_{3/2}$	$4p\ ^2P_{3/2}$	262.62	1.138e−02		9.837e−03	9.372e−03				2.751e+08	C+
$7d\ ^2D_{3/2}$	$5p\ ^2P_{3/2}$	564.72	1.749e−02		3.252e−02	3.009e−02				9.146e+07	C+
$7d\ ^2D_{3/2}$	$6p\ ^2P_{3/2}$	1384.97	2.302e−02		1.050e−01	1.200e−01				2.001e+07	C+
$7d\ ^2D_{3/2}$	$7p\ ^2P_{3/2}$	9015.42	5.489e−01		1.629e+01	1.784e+01				1.126e+07	D+
$7d\ ^2D_{3/2}$	$4f\ ^2F_{5/2}$	341.49	1.090e−02		1.226e−02	1.151e−02				1.559e+08	C+
$7d\ ^2D_{3/2}$	$5f\ ^2F_{5/2}$	744.17	6.465e−02		1.584e−01	1.493e−01				1.947e+08	B
$7d\ ^2D_{3/2}$	$6f\ ^2F_{5/2}$	2072.88	5.574e−01		3.804e+00	3.730e+00				2.163e+08	B
$7d\ ^2D_{5/2}$	$3p\ ^2P_{3/2}$	115.20	5.948e−02		2.256e−02	2.716e−02				4.983e+09	C
$7d\ ^2D_{5/2}$	$4p\ ^2P_{3/2}$	262.61	8.377e−02		7.242e−02	8.411e−02				1.350e+09	C+
$7d\ ^2D_{5/2}$	$5p\ ^2P_{3/2}$	564.68	1.294e−01		2.405e−01	2.698e−01				4.510e+08	C+
$7d\ ^2D_{5/2}$	$6p\ ^2P_{3/2}$	1384.73	2.156e−01		9.828e−01	1.074e+00				1.250e+08	C+
$7d\ ^2D_{5/2}$	$7p\ ^2P_{3/2}$	9005.35	5.422e+00		1.608e+02	1.605e+02				7.433e+07	D+
$7d\ ^2D_{5/2}$	$4f\ ^2F_{5/2}$	341.47	5.231e−04		5.881e−04	8.202e−04				4.987e+06	D+
$7d\ ^2D_{5/2}$	$5f\ ^2F_{5/2}$	744.10	3.874e−03		9.489e−03	1.064e−02				7.778e+06	C+
$7d\ ^2D_{5/2}$	$6f\ ^2F_{5/2}$	2072.35	3.836e−02		2.617e−01	2.657e−01				9.930e+06	C+
$7d\ ^2D_{5/2}$	$4f\ ^2F_{7/2}$	341.51	1.047e−02		1.177e−02	1.641e−02				9.979e+07	D+
$7d\ ^2D_{5/2}$	$5f\ ^2F_{7/2}$	744.18	7.755e−02		1.900e−01	2.129e−01				1.557e+08	C+
$7d\ ^2D_{5/2}$	$6f\ ^2F_{7/2}$	2072.72	7.680e−01		5.240e+00	5.320e+00				1.987e+08	B
$7f\ ^2F_{5/2}$	$3d\ ^2D_{3/2}$	146.78	1.296e−01		6.265e−02	6.715e−02				6.690e+09	B
$7f\ ^2F_{5/2}$	$4d\ ^2D_{3/2}$	316.38	3.108e−01		3.237e−01	3.268e−01				3.451e+09	B+

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Upper level	Lower level	λ [RCI]	gf [RCI]	gf Ref. [17]	S [RCI]	S [MBPT]	S Ref. [48]	S Ref. [20]	S Ref. [22]	A [RCI]	Unc.
$7f\ ^2F_{5/2}$	$5d\ ^2D_{3/2}$	674.78	7.015e−01		1.558e+00	1.548e+00				1.713e+09	B+
$7f\ ^2F_{5/2}$	$6d\ ^2D_{3/2}$	1729.89	2.217e+00		1.262e+01	1.250e+01				8.235e+08	B
$7f\ ^2F_{5/2}$	$3d\ ^2D_{5/2}$	146.81	8.502e−03		4.109e−03	4.792e−03				4.386e+08	C+
$7f\ ^2F_{5/2}$	$4d\ ^2D_{5/2}$	316.43	2.070e−02		2.156e−02	2.334e−02				2.298e+08	C+
$7f\ ^2F_{5/2}$	$5d\ ^2D_{5/2}$	674.92	4.739e−02		1.053e−01	1.107e−01				1.156e+08	B
$7f\ ^2F_{5/2}$	$6d\ ^2D_{5/2}$	1730.35	1.517e−01		8.642e−01	8.949e−01				5.633e+07	B
$7f\ ^2F_{5/2}$	$5g\ ^2G_{7/2}$	728.11	9.914e−03		2.376e−02	2.500e−02				2.079e+07	C+
$7f\ ^2F_{5/2}$	$6g\ ^2G_{7/2}$	1943.00	1.683e−01		1.077e+00	1.063e+00				4.957e+07	B
$7f\ ^2F_{7/2}$	$3d\ ^2D_{5/2}$	146.80	1.701e−01		8.221e−02	9.587e−02				6.581e+09	C+
$7f\ ^2F_{7/2}$	$4d\ ^2D_{5/2}$	316.43	4.140e−01		4.313e−01	4.668e−01				3.448e+09	B
$7f\ ^2F_{7/2}$	$5d\ ^2D_{5/2}$	674.89	9.474e−01		2.105e+00	2.213e+00				1.734e+09	B+
$7f\ ^2F_{7/2}$	$6d\ ^2D_{5/2}$	1730.19	3.032e+00		1.727e+01	1.788e+01				8.445e+08	B
$7f\ ^2F_{7/2}$	$7d\ ^2D_{5/2}$	27098.71	2.695e+00		2.404e+02	2.394e+02				3.060e+06	E
$7f\ ^2F_{7/2}$	$5g\ ^2G_{9/2}$	728.14	1.284e−02		3.079e−02	3.239e−02				2.020e+07	C+
$7f\ ^2F_{7/2}$	$6g\ ^2G_{9/2}$	1943.00	2.181e−01		1.395e+00	1.377e+00				4.816e+07	B
$7g\ ^2G_{7/2}$	$4f\ ^2F_{5/2}$	336.87	3.502e−01		3.884e−01	4.000e−01				2.573e+09	B+
$7g\ ^2G_{7/2}$	$5f\ ^2F_{5/2}$	722.60	1.370e+00		3.258e+00	3.305e+00				2.187e+09	B+
$7g\ ^2G_{7/2}$	$6f\ ^2F_{5/2}$	1913.73	6.491e+00		4.089e+01	4.153e+01				1.478e+09	B
$7g\ ^2G_{7/2}$	$4f\ ^2F_{7/2}$	336.91	1.296e−02		1.438e−02	1.481e−02				9.523e+07	C+
$7g\ ^2G_{7/2}$	$5f\ ^2F_{7/2}$	722.67	5.072e−02		1.207e−01	1.224e−01				8.097e+07	B
$7g\ ^2G_{7/2}$	$6f\ ^2F_{7/2}$	1914.04	2.405e−01		1.515e+00	1.539e+00				5.474e+07	B
$7g\ ^2G_{7/2}$	$6h\ ^2H_{9/2}$	1933.21	6.223e−02		3.961e−01	3.937e−01				1.388e+07	C+
$7g\ ^2G_{9/2}$	$4f\ ^2F_{7/2}$	336.90	4.539e−01		5.035e−01	5.185e−01				2.668e+09	B+
$7g\ ^2G_{9/2}$	$5f\ ^2F_{7/2}$	722.66	1.775e+00		4.224e+00	4.284e+00				2.268e+09	B+
$7g\ ^2G_{9/2}$	$6f\ ^2F_{7/2}$	1913.92	8.416e+00		5.302e+01	5.385e+01				1.532e+09	B
$7g\ ^2G_{9/2}$	$6h\ ^2H_{11/2}$	1933.22	7.635e−02		4.859e−01	4.830e−01				1.363e+07	C+
$7h\ ^2H_{11/2}$	$5g\ ^2G_{9/2}$	726.29	1.976e+00		4.725e+00	4.743e+00				2.082e+09	B+
$7h\ ^2H_{11/2}$	$6g\ ^2G_{9/2}$	1929.91	1.462e+01		9.287e+01	9.316e+01				2.181e+09	B
$7h\ ^2H_{9/2}$	$5g\ ^2G_{7/2}$	726.25	1.610e+00		3.850e+00	3.865e+00				2.036e+09	B+
$7h\ ^2H_{9/2}$	$6g\ ^2G_{7/2}$	1929.80	1.191e+01		7.566e+01	7.590e+01				2.133e+09	B
$7h\ ^2H_{9/2}$	$5g\ ^2G_{9/2}$	726.30	3.659e−02		8.748e−02	8.782e−02				4.626e+07	B
$7h\ ^2H_{9/2}$	$6g\ ^2G_{9/2}$	1930.00	2.707e−01		1.720e+00	1.725e+00				4.847e+07	B
$7i\ ^2I_{11/2}$	$6h\ ^2H_{9/2}$	1931.43	2.006e+01		1.276e+02	1.277e+02				2.989e+09	B
$7i\ ^2I_{11/2}$	$6h\ ^2H_{11/2}$	1931.56	3.087e−01		1.963e+00	1.965e+00				4.599e+07	B
$7i\ ^2I_{13/2}$	$6h\ ^2H_{11/2}$	1931.50	2.377e+01		1.511e+02	1.513e+02				3.035e+09	B
$7p\ ^2P_{1/2}$	$3s\ ^2S_{1/2}$	100.05	7.839e−03		2.582e−03	3.021e−03				2.612e+09	C+
$7p\ ^2P_{1/2}$	$4s\ ^2S_{1/2}$	236.58	1.420e−02		1.106e−02	1.273e−02				8.461e+08	C+
$7p\ ^2P_{1/2}$	$5s\ ^2S_{1/2}$	522.92	2.968e−02		5.110e−02	5.567e−02				3.620e+08	B
$7p\ ^2P_{1/2}$	$6s\ ^2S_{1/2}$	1333.26	8.120e−02		3.564e−01	3.655e−01				1.524e+08	B

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Upper level	Lower level	λ [RCI]	gf [RCI]	gf Ref. [17]	S [RCI]	S [MBPT]	S Ref. [48]	S Ref. [20]	S Ref. [22]	A [RCI]	Unc.
$7p\ ^2P_{1/2}$	$7s\ ^2S_{1/2}$	11878.84	1.068e+00		4.176e+01	4.160e+01				2.524e+07	E
$7p\ ^2P_{1/2}$	$3d\ ^2D_{3/2}$	150.08	7.692e−03		3.800e−03	3.407e−03				1.139e+09	C+
$7p\ ^2P_{1/2}$	$4d\ ^2D_{3/2}$	332.09	3.197e−02		3.495e−02	3.315e−02				9.668e+08	B
$7p\ ^2P_{1/2}$	$5d\ ^2D_{3/2}$	750.52	1.342e−01		3.315e−01	3.183e−01				7.944e+08	B+
$7p\ ^2P_{1/2}$	$6d\ ^2D_{3/2}$	2333.58	1.220e+00		9.374e+00	9.108e+00				7.473e+08	C+
$7p\ ^2P_{3/2}$	$3s\ ^2S_{1/2}$	100.04	1.531e−02		5.043e−03	5.896e−03				2.552e+09	C+
$7p\ ^2P_{3/2}$	$4s\ ^2S_{1/2}$	236.49	2.756e−02		2.146e−02	2.472e−02				8.217e+08	C+
$7p\ ^2P_{3/2}$	$5s\ ^2S_{1/2}$	522.47	5.721e−02		9.840e−02	1.073e−01				3.495e+08	B
$7p\ ^2P_{3/2}$	$6s\ ^2S_{1/2}$	1330.33	1.542e−01		6.755e−01	6.935e−01				1.453e+08	B
$7p\ ^2P_{3/2}$	$7s\ ^2S_{1/2}$	11650.48	2.176e+00		8.344e+01	8.314e+01				2.673e+07	E
$7p\ ^2P_{3/2}$	$3d\ ^2D_{3/2}$	150.04	1.529e−03		7.550e−04	6.780e−04				1.132e+08	C
$7p\ ^2P_{3/2}$	$4d\ ^2D_{3/2}$	331.91	6.352e−03		6.941e−03	6.586e−03				9.616e+07	C+
$7p\ ^2P_{3/2}$	$5d\ ^2D_{3/2}$	749.59	2.664e−02		6.573e−02	6.311e−02				7.905e+07	B
$7p\ ^2P_{3/2}$	$6d\ ^2D_{3/2}$	2324.63	2.407e−01		1.842e+00	1.790e+00				7.427e+07	C+
$7p\ ^2P_{3/2}$	$3d\ ^2D_{5/2}$	150.06	1.031e−02		5.095e−03	6.079e−03				7.637e+08	C
$7p\ ^2P_{3/2}$	$4d\ ^2D_{5/2}$	331.97	4.808e−02		5.255e−02	5.923e−02				7.276e+08	C+
$7p\ ^2P_{3/2}$	$5d\ ^2D_{5/2}$	749.75	2.175e−01		5.367e−01	5.683e−01				6.451e+08	B+
$7p\ ^2P_{3/2}$	$6d\ ^2D_{5/2}$	2325.45	2.083e+00		1.595e+01	1.613e+01				6.424e+08	C+
$7s\ ^2S_{1/2}$	$3p\ ^2P_{1/2}$	117.50	6.179e−03		2.390e−03	2.910e−03				1.493e+09	C
$7s\ ^2S_{1/2}$	$4p\ ^2P_{1/2}$	276.15	2.002e−02		1.820e−02	2.075e−02				8.756e+08	C+
$7s\ ^2S_{1/2}$	$5p\ ^2P_{1/2}$	633.36	7.400e−02		1.543e−01	1.654e−01				6.152e+08	B
$7s\ ^2S_{1/2}$	$6p\ ^2P_{1/2}$	1894.02	5.468e−01		3.410e+00	3.522e+00				5.084e+08	B
$7s\ ^2S_{1/2}$	$3p\ ^2P_{3/2}$	117.87	1.253e−02		4.861e−03	5.881e−03				3.007e+09	C
$7s\ ^2S_{1/2}$	$4p\ ^2P_{3/2}$	276.93	4.051e−02		3.693e−02	4.196e−02				1.762e+09	C+
$7s\ ^2S_{1/2}$	$5p\ ^2P_{3/2}$	635.31	1.497e−01		3.132e−01	3.351e−01				1.237e+09	B
$7s\ ^2S_{1/2}$	$6p\ ^2P_{3/2}$	1903.73	1.113e+00		6.975e+00	7.199e+00				1.024e+09	B
$8d\ ^2D_{3/2}$	$3p\ ^2P_{1/2}$	110.41	2.489e−02		9.047e−03	1.050e−02				3.405e+09	E
$8d\ ^2D_{3/2}$	$4p\ ^2P_{1/2}$	239.97	4.055e−02		3.204e−02	2.904e−02				1.174e+09	E
$8d\ ^2D_{3/2}$	$5p\ ^2P_{1/2}$	470.62	5.084e−02		7.876e−02	7.635e−02				3.827e+08	D+
$8d\ ^2D_{3/2}$	$6p\ ^2P_{1/2}$	931.12	7.574e−02		2.322e−01	2.231e−01				1.457e+08	D+
$8d\ ^2D_{3/2}$	$7p\ ^2P_{1/2}$	2165.36	1.134e−01		8.082e−01	8.162e−01				4.032e+07	C
$8d\ ^2D_{3/2}$	$8p\ ^2P_{1/2}$	13515.72	3.489e+00		1.552e+02	1.544e+02				3.185e+07	E
$8d\ ^2D_{3/2}$	$3p\ ^2P_{3/2}$	110.74	4.873e−03		1.777e−03	2.125e−03				6.626e+08	E
$8d\ ^2D_{3/2}$	$4p\ ^2P_{3/2}$	240.55	7.597e−03		6.016e−03	5.918e−03				2.189e+08	E
$8d\ ^2D_{3/2}$	$5p\ ^2P_{3/2}$	471.69	1.017e−02		1.580e−02	1.569e−02				7.625e+07	E
$8d\ ^2D_{3/2}$	$6p\ ^2P_{3/2}$	933.46	1.425e−02		4.381e−02	4.641e−02				2.728e+07	D
$8d\ ^2D_{3/2}$	$7p\ ^2P_{3/2}$	2173.12	2.446e−02		1.750e−01	1.745e−01				8.638e+06	D+
$8d\ ^2D_{3/2}$	$8p\ ^2P_{3/2}$	13716.78	6.371e−01		2.877e+01	3.099e+01				5.646e+06	E
$8d\ ^2D_{3/2}$	$4f\ ^2F_{5/2}$	305.10	6.175e−03		6.202e−03	6.659e−03				1.106e+08	E

Table S1 – continued from previous page

Upper level	Lower level	λ [RCI]	gf [RCI]	gf Ref. [17]	S [RCI]	S [MBPT]	S Ref. [48]	S Ref. [20]	S Ref. [22]	A [RCI]	Unc.
$8d\ ^2D_{3/2}$	$5f\ ^2F_{5/2}$	590.66	2.816e−02		5.475e−02	5.080e−02				1.346e+08	D
$8d\ ^2D_{3/2}$	$6f\ ^2F_{5/2}$	1202.40	1.087e−01		4.303e−01	4.249e−01				1.254e+08	C
$8d\ ^2D_{3/2}$	$7f\ ^2F_{5/2}$	3202.32	7.361e−01		7.761e+00	8.403e+00				1.197e+08	C+
$8d\ ^2D_{5/2}$	$3p\ ^2P_{3/2}$	110.74	3.687e−02		1.344e−02	1.908e−02				3.342e+09	E
$8d\ ^2D_{5/2}$	$4p\ ^2P_{3/2}$	240.55	4.949e−02		3.919e−02	5.311e−02				9.508e+08	D
$8d\ ^2D_{5/2}$	$5p\ ^2P_{3/2}$	471.67	7.076e−02		1.099e−01	1.408e−01				3.536e+08	D+
$8d\ ^2D_{5/2}$	$6p\ ^2P_{3/2}$	933.36	1.119e−01		3.439e−01	4.160e−01				1.428e+08	C
$8d\ ^2D_{5/2}$	$7p\ ^2P_{3/2}$	2172.61	1.887e−01		1.350e+00	1.560e+00				4.444e+07	C
$8d\ ^2D_{5/2}$	$8p\ ^2P_{3/2}$	13696.40	6.226e+00		2.807e+02	2.789e+02				3.690e+07	E
$8d\ ^2D_{5/2}$	$4f\ ^2F_{5/2}$	305.09	2.397e−04		2.408e−04	4.746e−04				2.863e+06	E
$8d\ ^2D_{5/2}$	$5f\ ^2F_{5/2}$	590.62	1.361e−03		2.646e−03	3.620e−03				4.336e+06	E
$8d\ ^2D_{5/2}$	$6f\ ^2F_{5/2}$	1202.25	6.718e−03		2.659e−02	3.028e−02				5.167e+06	E
$8d\ ^2D_{5/2}$	$7f\ ^2F_{5/2}$	3201.21	5.534e−02		5.833e−01	5.985e−01				6.004e+06	D+
$8d\ ^2D_{5/2}$	$4f\ ^2F_{7/2}$	305.12	4.802e−03		4.823e−03	9.487e−03				5.734e+07	E
$8d\ ^2D_{5/2}$	$5f\ ^2F_{7/2}$	590.67	2.725e−02		5.299e−02	7.241e−02				8.682e+07	D
$8d\ ^2D_{5/2}$	$6f\ ^2F_{7/2}$	1202.37	1.345e−01		5.323e−01	6.059e−01				1.034e+08	C
$8d\ ^2D_{5/2}$	$7f\ ^2F_{7/2}$	3201.76	1.108e+00		1.168e+01	1.198e+01				1.202e+08	C+
$8f\ ^2F_{5/2}$	$3d\ ^2D_{3/2}$	139.86	7.443e−02		3.427e−02	3.938e−02				4.230e+09	E
$8f\ ^2F_{5/2}$	$4d\ ^2D_{3/2}$	285.89	1.639e−01		1.543e−01	1.649e−01				2.229e+09	D+
$8f\ ^2F_{5/2}$	$5d\ ^2D_{3/2}$	549.75	3.120e−01		5.647e−01	5.880e−01				1.148e+09	C
$8f\ ^2F_{5/2}$	$6d\ ^2D_{3/2}$	1092.75	6.632e−01		2.386e+00	2.461e+00				6.174e+08	C+
$8f\ ^2F_{5/2}$	$3d\ ^2D_{5/2}$	139.88	4.840e−03		2.229e−03	2.808e−03				2.750e+08	E
$8f\ ^2F_{5/2}$	$4d\ ^2D_{5/2}$	285.94	1.084e−02		1.021e−02	1.177e−02				1.474e+08	E
$8f\ ^2F_{5/2}$	$5d\ ^2D_{5/2}$	549.84	2.101e−02		3.803e−02	4.200e−02				7.726e+07	D
$8f\ ^2F_{5/2}$	$6d\ ^2D_{5/2}$	1092.93	4.566e−02		1.643e−01	1.760e−01				4.249e+07	D+
$8f\ ^2F_{5/2}$	$7d\ ^2D_{5/2}$	2674.52	1.451e−01		1.278e+00	1.338e+00				2.255e+07	C
$8f\ ^2F_{5/2}$	$5g\ ^2G_{7/2}$	584.64	3.221e−03		6.199e−03	7.520e−03				1.048e+07	E
$8f\ ^2F_{5/2}$	$6g\ ^2G_{7/2}$	1174.10	2.877e−02		1.112e−01	1.180e−01				2.320e+07	D+
$8f\ ^2F_{5/2}$	$7g\ ^2G_{7/2}$	2994.88	3.037e−01		2.994e+00	2.978e+00				3.764e+07	C+
$8f\ ^2F_{7/2}$	$3d\ ^2D_{5/2}$	139.88	9.683e−02		4.459e−02	5.617e−02				4.126e+09	D
$8f\ ^2F_{7/2}$	$4d\ ^2D_{5/2}$	285.93	2.169e−01		2.042e−01	2.354e−01				2.212e+09	D+
$8f\ ^2F_{7/2}$	$5d\ ^2D_{5/2}$	549.83	4.202e−01		7.605e−01	8.398e−01				1.159e+09	C
$8f\ ^2F_{7/2}$	$6d\ ^2D_{5/2}$	1092.89	9.128e−01		3.284e+00	3.518e+00				6.372e+08	C+
$8f\ ^2F_{7/2}$	$7d\ ^2D_{5/2}$	2674.26	2.900e+00		2.553e+01	2.674e+01				3.381e+08	C+
$8f\ ^2F_{7/2}$	$8d\ ^2D_{5/2}$	40478.34	3.227e+00		4.301e+02	4.265e+02				1.642e+06	E
$8f\ ^2F_{7/2}$	$7g\ ^2G_{7/2}$	2994.55	1.123e−02		1.107e−01	1.101e−01				1.044e+06	D+
$8f\ ^2F_{7/2}$	$5g\ ^2G_{9/2}$	584.66	4.172e−03		8.030e−03	9.741e−03				1.018e+07	E
$8f\ ^2F_{7/2}$	$6g\ ^2G_{9/2}$	1174.12	3.728e−02		1.441e−01	1.529e−01				2.255e+07	D+
$8f\ ^2F_{7/2}$	$7g\ ^2G_{9/2}$	2994.86	3.934e−01		3.879e+00	3.858e+00				3.657e+07	C+

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Upper level	Lower level	λ [RCI]	gf [RCI]	gf Ref. [17]	S [RCI]	S [MBPT]	S Ref. [48]	S Ref. [20]	S Ref. [22]	A [RCI]	Unc.
$8g\ ^2G_{7/2}$	$4f\ ^2F_{5/2}$	302.61	1.588e−01		1.582e−01	1.679e−01				1.446e+09	D+
$8g\ ^2G_{7/2}$	$5f\ ^2F_{5/2}$	581.40	5.080e−01		9.724e−01	1.003e+00				1.253e+09	C+
$8g\ ^2G_{7/2}$	$6f\ ^2F_{5/2}$	1164.65	1.460e+00		5.599e+00	5.717e+00				8.976e+08	B
$8g\ ^2G_{7/2}$	$7f\ ^2F_{5/2}$	2947.85	6.249e+00		6.064e+01	6.189e+01				5.996e+08	C+
$8g\ ^2G_{7/2}$	$4f\ ^2F_{7/2}$	302.64	5.880e−03		5.858e−03	6.215e−03				5.353e+07	E
$8g\ ^2G_{7/2}$	$5f\ ^2F_{7/2}$	581.45	1.881e−02		3.601e−02	3.715e−02				4.639e+07	D
$8g\ ^2G_{7/2}$	$6f\ ^2F_{7/2}$	1164.77	5.408e−02		2.074e−01	2.118e−01				3.324e+07	D+
$8g\ ^2G_{7/2}$	$7f\ ^2F_{7/2}$	2948.31	2.316e−01		2.247e+00	2.293e+00				2.221e+07	C
$8g\ ^2G_{7/2}$	$6h\ ^2H_{9/2}$	1171.84	8.857e−03		3.417e−02	3.456e−02				5.378e+06	E
$8g\ ^2G_{7/2}$	$7h\ ^2H_{9/2}$	2978.77	1.697e−01		1.664e+00	1.658e+00				1.595e+07	C
$8g\ ^2G_{9/2}$	$4f\ ^2F_{7/2}$	302.64	2.059e−01		2.051e−01	2.176e−01				1.499e+09	D+
$8g\ ^2G_{9/2}$	$5f\ ^2F_{7/2}$	581.44	6.585e−01		1.261e+00	1.301e+00				1.299e+09	C+
$8g\ ^2G_{9/2}$	$6f\ ^2F_{7/2}$	1164.74	1.893e+00		7.258e+00	7.412e+00				9.307e+08	B
$8g\ ^2G_{9/2}$	$7f\ ^2F_{7/2}$	2948.12	8.102e+00		7.863e+01	8.024e+01				6.218e+08	C+
$8g\ ^2G_{9/2}$	$6h\ ^2H_{11/2}$	1171.86	1.086e−02		4.192e−02	4.241e−02				5.277e+06	D
$8g\ ^2G_{9/2}$	$7h\ ^2H_{11/2}$	2978.78	2.082e−01		2.042e+00	2.034e+00				1.565e+07	C
$8h\ ^2H_{11/2}$	$5g\ ^2G_{9/2}$	583.83	5.858e−01		1.126e+00	1.135e+00				9.553e+08	C+
$8h\ ^2H_{11/2}$	$6g\ ^2G_{9/2}$	1170.78	2.606e+00		1.004e+01	1.008e+01				1.057e+09	B
$8h\ ^2H_{11/2}$	$7g\ ^2G_{9/2}$	2973.25	1.363e+01		1.334e+02	1.339e+02				8.570e+08	C+
$8h\ ^2H_{11/2}$	$7i\ ^2I_{13/2}$	2977.32	7.708e−02		7.555e−01	7.530e−01				4.833e+06	C
$8h\ ^2H_{9/2}$	$5g\ ^2G_{7/2}$	583.80	4.774e−01		9.175e−01	9.245e−01				9.342e+08	C+
$8h\ ^2H_{9/2}$	$6g\ ^2G_{7/2}$	1170.73	2.123e+00		8.184e+00	8.212e+00				1.033e+09	B
$8h\ ^2H_{9/2}$	$7g\ ^2G_{7/2}$	2973.09	1.110e+01		1.087e+02	1.091e+02				8.379e+08	C+
$8h\ ^2H_{9/2}$	$5g\ ^2G_{9/2}$	583.83	1.084e−02		2.084e−02	2.100e−02				2.122e+07	E
$8h\ ^2H_{9/2}$	$6g\ ^2G_{9/2}$	1170.81	4.825e−02		1.860e−01	1.866e−01				2.348e+07	D+
$8h\ ^2H_{9/2}$	$7g\ ^2G_{9/2}$	2973.39	2.524e−01		2.471e+00	2.481e+00				1.904e+07	C+
$8h\ ^2H_{9/2}$	$7i\ ^2I_{11/2}$	2977.32	6.508e−02		6.379e−01	6.357e−01				4.897e+06	C
$8i\ ^2I_{11/2}$	$6h\ ^2H_{9/2}$	1171.38	2.167e+00		8.356e+00	8.365e+00				8.778e+08	B
$8i\ ^2I_{11/2}$	$7h\ ^2H_{9/2}$	2975.81	1.804e+01		1.767e+02	1.769e+02				1.132e+09	C+
$8i\ ^2I_{11/2}$	$6h\ ^2H_{11/2}$	1171.43	3.333e−02		1.285e−01	1.287e−01				1.350e+07	D+
$8i\ ^2I_{11/2}$	$7h\ ^2H_{11/2}$	2976.01	2.776e−01		2.719e+00	2.722e+00				1.742e+07	C+
$8i\ ^2I_{13/2}$	$6h\ ^2H_{11/2}$	1171.42	2.567e+00		9.899e+00	9.909e+00				8.912e+08	B
$8i\ ^2I_{13/2}$	$7h\ ^2H_{11/2}$	2975.91	2.137e+01		2.094e+02	2.096e+02				1.150e+09	C+
$8p\ ^2P_{1/2}$	$3s\ ^2S_{1/2}$	96.32	4.604e−03		1.460e−03	2.092e−03				1.655e+09	E
$8p\ ^2P_{1/2}$	$4s\ ^2S_{1/2}$	216.70	7.703e−03		5.495e−03	7.706e−03				5.471e+08	E
$8p\ ^2P_{1/2}$	$5s\ ^2S_{1/2}$	434.75	1.411e−02		2.019e−02	2.594e−02				2.490e+08	E
$8p\ ^2P_{1/2}$	$6s\ ^2S_{1/2}$	878.83	2.989e−02		8.647e−02	1.012e−01				1.290e+08	D+
$8p\ ^2P_{1/2}$	$7s\ ^2S_{1/2}$	2118.59	8.283e−02		5.777e−01	6.180e−01				6.155e+07	C
$8p\ ^2P_{1/2}$	$8s\ ^2S_{1/2}$	18156.98	1.236e+00		7.389e+01	7.303e+01				1.250e+07	E

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Upper level	Lower level	λ [RCI]	gf [RCI]	gf Ref. [17]	S [RCI]	S [MBPT]	S Ref. [48]	S Ref. [20]	S Ref. [22]	A [RCI]	Unc.
$8p\ ^2P_{1/2}$	$3d\ ^2D_{3/2}$	141.82	4.013e−03		1.874e−03	2.085e−03				6.654e+08	E
$8p\ ^2P_{1/2}$	$4d\ ^2D_{3/2}$	294.20	1.476e−02		1.429e−02	1.570e−02				5.686e+08	E
$8p\ ^2P_{1/2}$	$5d\ ^2D_{3/2}$	581.31	4.613e−02		8.828e−02	9.369e−02				4.552e+08	D+
$8p\ ^2P_{1/2}$	$6d\ ^2D_{3/2}$	1224.96	1.721e−01		6.942e−01	7.224e−01				3.826e+08	C
$8p\ ^2P_{3/2}$	$3s\ ^2S_{1/2}$	96.31	8.995e−03		2.852e−03	4.093e−03				1.617e+09	E
$8p\ ^2P_{3/2}$	$4s\ ^2S_{1/2}$	216.65	1.496e−02		1.067e−02	1.501e−02				5.315e+08	E
$8p\ ^2P_{3/2}$	$5s\ ^2S_{1/2}$	434.55	2.727e−02		3.902e−02	5.028e−02				2.408e+08	D
$8p\ ^2P_{3/2}$	$6s\ ^2S_{1/2}$	878.00	5.741e−02		1.659e−01	1.947e−01				1.242e+08	D+
$8p\ ^2P_{3/2}$	$7s\ ^2S_{1/2}$	2113.73	1.568e−01		1.091e+00	1.170e+00				5.854e+07	C
$8p\ ^2P_{3/2}$	$8s\ ^2S_{1/2}$	17806.34	2.518e+00		1.476e+02	1.459e+02				1.324e+07	E
$8p\ ^2P_{3/2}$	$3d\ ^2D_{3/2}$	141.80	7.995e−04		3.732e−04	4.158e−04				6.631e+07	E
$8p\ ^2P_{3/2}$	$4d\ ^2D_{3/2}$	294.10	2.938e−03		2.845e−03	3.126e−03				5.664e+07	E
$8p\ ^2P_{3/2}$	$5d\ ^2D_{3/2}$	580.95	9.182e−03		1.756e−02	1.863e−02				4.537e+07	E
$8p\ ^2P_{3/2}$	$6d\ ^2D_{3/2}$	1223.33	3.422e−02		1.378e−01	1.433e−01				3.813e+07	D+
$8p\ ^2P_{3/2}$	$3d\ ^2D_{5/2}$	141.82	5.720e−03		2.671e−03	3.720e−03				4.742e+08	E
$8p\ ^2P_{3/2}$	$4d\ ^2D_{5/2}$	294.15	2.297e−02		2.224e−02	2.807e−02				4.427e+08	E
$8p\ ^2P_{3/2}$	$5d\ ^2D_{5/2}$	581.04	7.628e−02		1.459e−01	1.675e−01				3.768e+08	D+
$8p\ ^2P_{3/2}$	$6d\ ^2D_{5/2}$	1223.56	2.990e−01		1.204e+00	1.290e+00				3.330e+08	C+
$8p\ ^2P_{3/2}$	$7d\ ^2D_{5/2}$	3620.32	2.648e+00		3.156e+01	3.206e+01				3.369e+08	C+
$8s\ ^2S_{1/2}$	$3p\ ^2P_{1/2}$	112.01	3.543e−03		1.306e−03	1.875e−03				9.417e+08	E
$8s\ ^2S_{1/2}$	$4p\ ^2P_{1/2}$	247.64	9.963e−03		8.122e−03	1.049e−02				5.418e+08	E
$8s\ ^2S_{1/2}$	$5p\ ^2P_{1/2}$	501.05	2.781e−02		4.588e−02	5.366e−02				3.695e+08	D
$8s\ ^2S_{1/2}$	$6p\ ^2P_{1/2}$	1058.30	9.481e−02		3.303e−01	3.605e−01				2.823e+08	D+
$8s\ ^2S_{1/2}$	$7p\ ^2P_{1/2}$	3005.22	6.707e−01		6.636e+00	6.912e+00				2.477e+08	C+
$8s\ ^2S_{1/2}$	$3p\ ^2P_{3/2}$	112.35	7.185e−03		2.658e−03	3.769e−03				1.898e+09	E
$8s\ ^2S_{1/2}$	$4p\ ^2P_{3/2}$	248.26	2.016e−02		1.648e−02	2.111e−02				1.091e+09	E
$8s\ ^2S_{1/2}$	$5p\ ^2P_{3/2}$	502.27	5.619e−02		9.292e−02	1.083e−01				7.429e+08	D+
$8s\ ^2S_{1/2}$	$6p\ ^2P_{3/2}$	1061.32	1.917e−01		6.699e−01	7.295e−01				5.676e+08	C
$8s\ ^2S_{1/2}$	$7p\ ^2P_{3/2}$	3020.20	1.365e+00		1.357e+01	1.412e+01				4.990e+08	C+
$9d\ ^2D_{3/2}$	$3p\ ^2P_{1/2}$	107.58	1.321e−02		4.680e−03	1.108e−02				1.904e+09	E
$9d\ ^2D_{3/2}$	$4p\ ^2P_{1/2}$	226.99	1.663e−02		1.242e−02	2.847e−02				5.381e+08	E
$9d\ ^2D_{3/2}$	$5p\ ^2P_{1/2}$	423.15	2.245e−02		3.128e−02	6.413e−02				2.091e+08	E
$9d\ ^2D_{3/2}$	$6p\ ^2P_{1/2}$	761.98	3.255e−02		8.165e−02	1.495e−01				9.348e+07	E
$9d\ ^2D_{3/2}$	$7p\ ^2P_{1/2}$	1428.16	5.202e−02		2.446e−01	4.002e−01				4.253e+07	E
$9d\ ^2D_{3/2}$	$8p\ ^2P_{1/2}$	3201.29	8.627e−02		9.092e−01	1.358e+00				1.404e+07	D
$9d\ ^2D_{3/2}$	$9p\ ^2P_{1/2}$	19525.34	3.953e+00		2.541e+02	2.440e+02				1.729e+07	E
$9d\ ^2D_{3/2}$	$3p\ ^2P_{3/2}$	107.90	2.703e−03		9.601e−04	2.215e−03				3.872e+08	E
$9d\ ^2D_{3/2}$	$4p\ ^2P_{3/2}$	227.51	3.462e−03		2.593e−03	5.727e−03				1.115e+08	E
$9d\ ^2D_{3/2}$	$5p\ ^2P_{3/2}$	424.01	4.625e−03		6.456e−03	1.299e−02				4.289e+07	E

Table S1 – continued from previous page

Upper level	Lower level	λ [RCI]	gf [RCI]	gf Ref. [17]	S [RCI]	S [MBPT]	S Ref. [48]	S Ref. [20]	S Ref. [22]	A [RCI]	Unc.
$9d\ ^2D_{3/2}$	$6p\ ^2P_{3/2}$	763.55	6.778e−03		1.704e−02	3.054e−02				1.939e+07	E
$9d\ ^2D_{3/2}$	$7p\ ^2P_{3/2}$	1431.53	1.102e−02		5.195e−02	8.280e−02				8.971e+06	E
$9d\ ^2D_{3/2}$	$8p\ ^2P_{3/2}$	3212.44	1.885e−02		1.993e−01	2.889e−01				3.045e+06	D
$9d\ ^2D_{3/2}$	$9p\ ^2P_{3/2}$	19814.68	7.812e−01		5.096e+01	4.900e+01				3.318e+06	E
$9d\ ^2D_{3/2}$	$4f\ ^2F_{5/2}$	284.42	1.757e−03		1.645e−03	6.405e−03				3.622e+07	E
$9d\ ^2D_{3/2}$	$5f\ ^2F_{5/2}$	517.76	8.906e−03		1.518e−02	3.215e−02				5.540e+07	E
$9d\ ^2D_{3/2}$	$6f\ ^2F_{5/2}$	934.53	3.364e−02		1.035e−01	1.568e−01				6.422e+07	D
$9d\ ^2D_{3/2}$	$7f\ ^2F_{5/2}$	1816.00	1.393e−01		8.327e−01	1.020e+00				7.043e+07	C
$9d\ ^2D_{3/2}$	$8f\ ^2F_{5/2}$	4681.44	1.031e+00		1.590e+01	1.689e+01				7.848e+07	C
$9d\ ^2D_{5/2}$	$3p\ ^2P_{3/2}$	107.89	2.328e−02		8.268e−03	1.990e−02				2.223e+09	E
$9d\ ^2D_{5/2}$	$4p\ ^2P_{3/2}$	227.50	2.987e−02		2.237e−02	5.142e−02				6.416e+08	E
$9d\ ^2D_{5/2}$	$5p\ ^2P_{3/2}$	424.00	4.000e−02		5.584e−02	1.166e−01				2.474e+08	E
$9d\ ^2D_{5/2}$	$6p\ ^2P_{3/2}$	763.50	5.889e−02		1.480e−01	2.739e−01				1.123e+08	E
$9d\ ^2D_{5/2}$	$7p\ ^2P_{3/2}$	1431.35	9.586e−02		4.517e−01	7.420e−01				5.202e+07	E
$9d\ ^2D_{5/2}$	$8p\ ^2P_{3/2}$	3211.55	1.643e−01		1.737e+00	2.583e+00				1.771e+07	D
$9d\ ^2D_{5/2}$	$9p\ ^2P_{3/2}$	19781.01	7.055e+00		4.594e+02	4.410e+02				2.004e+07	E
$9d\ ^2D_{5/2}$	$4f\ ^2F_{5/2}$	284.41	1.206e−04		1.129e−04	4.569e−04				1.658e+06	E
$9d\ ^2D_{5/2}$	$5f\ ^2F_{5/2}$	517.73	6.166e−04		1.051e−03	2.292e−03				2.557e+06	E
$9d\ ^2D_{5/2}$	$6f\ ^2F_{5/2}$	934.46	2.346e−03		7.216e−03	1.117e−02				2.986e+06	E
$9d\ ^2D_{5/2}$	$7f\ ^2F_{5/2}$	1815.72	9.750e−03		5.828e−02	7.267e−02				3.288e+06	D
$9d\ ^2D_{5/2}$	$8f\ ^2F_{5/2}$	4679.56	7.278e−02		1.121e+00	1.203e+00				3.695e+06	D+
$9d\ ^2D_{5/2}$	$4f\ ^2F_{7/2}$	284.43	2.419e−03		2.266e−03	9.120e−03				3.325e+07	E
$9d\ ^2D_{5/2}$	$5f\ ^2F_{7/2}$	517.77	1.236e−02		2.107e−02	4.580e−02				5.126e+07	E
$9d\ ^2D_{5/2}$	$6f\ ^2F_{7/2}$	934.53	4.695e−02		1.444e−01	2.234e−01				5.976e+07	E
$9d\ ^2D_{5/2}$	$7f\ ^2F_{7/2}$	1815.90	1.951e−01		1.167e+00	1.454e+00				6.579e+07	D+
$9d\ ^2D_{5/2}$	$8f\ ^2F_{7/2}$	4680.35	1.457e+00		2.245e+01	2.408e+01				7.395e+07	C
$9f\ ^2F_{5/2}$	$3d\ ^2D_{3/2}$	135.48	3.928e−02		1.752e−02	2.889e−02				2.379e+09	E
$9f\ ^2F_{5/2}$	$4d\ ^2D_{3/2}$	268.18	8.477e−02		7.485e−02	1.084e−01				1.310e+09	D
$9f\ ^2F_{5/2}$	$5d\ ^2D_{3/2}$	487.80	1.508e−01		2.422e−01	3.241e−01				7.047e+08	D+
$9f\ ^2F_{5/2}$	$6d\ ^2D_{3/2}$	872.50	2.749e−01		7.896e−01	1.001e+00				4.014e+08	D+
$9f\ ^2F_{5/2}$	$9d\ ^2D_{3/2}$	57463.43	2.627e+00		4.970e+02	4.833e+02				8.846e+05	E
$9f\ ^2F_{5/2}$	$3d\ ^2D_{5/2}$	135.50	2.964e−03		1.322e−03	2.054e−03				1.794e+08	E
$9f\ ^2F_{5/2}$	$4d\ ^2D_{5/2}$	268.22	6.319e−03		5.580e−03	7.721e−03				9.765e+07	E
$9f\ ^2F_{5/2}$	$5d\ ^2D_{5/2}$	487.87	1.120e−02		1.799e−02	2.311e−02				5.230e+07	E
$9f\ ^2F_{5/2}$	$6d\ ^2D_{5/2}$	872.62	2.051e−02		5.892e−02	7.143e−02				2.995e+07	D
$9f\ ^2F_{5/2}$	$7d\ ^2D_{5/2}$	1653.14	4.406e−02		2.398e−01	2.760e−01				1.792e+07	D+
$9f\ ^2F_{5/2}$	$8d\ ^2D_{5/2}$	3911.13	1.410e−01		1.816e+00	1.990e+00				1.025e+07	C
$9f\ ^2F_{5/2}$	$5g\ ^2G_{7/2}$	515.07	1.372e−03		2.326e−03	4.196e−03				5.748e+06	E
$9f\ ^2F_{5/2}$	$6g\ ^2G_{7/2}$	923.59	9.581e−03		2.913e−02	3.872e−02				1.249e+07	E

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Upper level	Lower level	λ [RCI]	gf [RCI]	gf Ref. [17]	S [RCI]	S [MBPT]	S Ref. [48]	S Ref. [20]	S Ref. [22]	A [RCI]	Unc.
$9f\ ^2F_{5/2}$	$7g\ ^2G_{7/2}$	1770.18	5.417e−02		3.157e−01	3.583e−01				1.922e+07	D+
$9f\ ^2F_{5/2}$	$8g\ ^2G_{7/2}$	4370.02	4.589e−01		6.602e+00	6.791e+00				2.671e+07	C
$9f\ ^2F_{7/2}$	$3d\ ^2D_{5/2}$	135.50	5.931e−02		2.646e−02	4.109e−02				2.693e+09	E
$9f\ ^2F_{7/2}$	$4d\ ^2D_{5/2}$	268.22	1.264e−01		1.116e−01	1.544e−01				1.465e+09	D+
$9f\ ^2F_{7/2}$	$5d\ ^2D_{5/2}$	487.86	2.240e−01		3.597e−01	4.621e−01				7.846e+08	D+
$9f\ ^2F_{7/2}$	$6d\ ^2D_{5/2}$	872.60	4.102e−01		1.178e+00	1.428e+00				4.491e+08	C
$9f\ ^2F_{7/2}$	$7d\ ^2D_{5/2}$	1653.07	8.808e−01		4.794e+00	5.517e+00				2.688e+08	C+
$9f\ ^2F_{7/2}$	$8d\ ^2D_{5/2}$	3910.75	2.818e+00		3.628e+01	3.976e+01				1.536e+08	C
$9f\ ^2F_{7/2}$	$9d\ ^2D_{5/2}$	57664.36	3.758e+00		7.133e+02	6.907e+02				9.422e+05	E
$9f\ ^2F_{7/2}$	$5g\ ^2G_{9/2}$	515.09	1.776e−03		3.012e−03	5.434e−03				5.582e+06	E
$9f\ ^2F_{7/2}$	$6g\ ^2G_{9/2}$	923.61	1.241e−02		3.774e−02	5.016e−02				1.213e+07	D
$9f\ ^2F_{7/2}$	$7g\ ^2G_{9/2}$	1770.20	7.020e−02		4.091e−01	4.643e−01				1.868e+07	C
$9f\ ^2F_{7/2}$	$8g\ ^2G_{9/2}$	4369.96	5.945e−01		8.553e+00	8.798e+00				2.596e+07	C
$9g\ ^2G_{7/2}$	$4f\ ^2F_{5/2}$	282.89	8.621e−02		8.029e−02	9.362e−02				8.982e+08	D+
$9g\ ^2G_{7/2}$	$5f\ ^2F_{5/2}$	512.72	2.481e−01		4.188e−01	4.612e−01				7.870e+08	C
$9g\ ^2G_{7/2}$	$6f\ ^2F_{5/2}$	918.25	5.800e−01		1.753e+00	1.873e+00				5.735e+08	C+
$9g\ ^2G_{7/2}$	$7f\ ^2F_{5/2}$	1755.51	1.498e+00		8.656e+00	9.069e+00				4.052e+08	C+
$9g\ ^2G_{7/2}$	$8f\ ^2F_{5/2}$	4299.53	6.138e+00		8.688e+01	8.997e+01				2.768e+08	C
$9g\ ^2G_{7/2}$	$4f\ ^2F_{7/2}$	282.91	3.192e−03		2.973e−03	3.464e−03				3.325e+07	E
$9g\ ^2G_{7/2}$	$5f\ ^2F_{7/2}$	512.76	9.188e−03		1.551e−02	1.707e−02				2.914e+07	E
$9g\ ^2G_{7/2}$	$6f\ ^2F_{7/2}$	918.32	2.148e−02		6.493e−02	6.938e−02				2.124e+07	D
$9g\ ^2G_{7/2}$	$7f\ ^2F_{7/2}$	1755.68	5.548e−02		3.207e−01	3.359e−01				1.501e+07	D+
$9g\ ^2G_{7/2}$	$8f\ ^2F_{7/2}$	4300.19	2.275e−01		3.220e+00	3.334e+00				1.026e+07	C
$9g\ ^2G_{7/2}$	$6h\ ^2H_{9/2}$	922.71	2.671e−03		8.114e−03	8.740e−03				2.616e+06	E
$9g\ ^2G_{7/2}$	$7h\ ^2H_{9/2}$	1766.43	2.667e−02		1.551e−01	1.596e−01				7.126e+06	D+
$9g\ ^2G_{7/2}$	$8h\ ^2H_{9/2}$	4345.25	3.107e−01		4.444e+00	4.463e+00				1.372e+07	C
$9g\ ^2G_{9/2}$	$4f\ ^2F_{7/2}$	282.91	1.118e−01		1.041e−01	1.213e−01				9.313e+08	D+
$9g\ ^2G_{9/2}$	$5f\ ^2F_{7/2}$	512.75	3.217e−01		5.430e−01	5.977e−01				8.161e+08	C
$9g\ ^2G_{9/2}$	$6f\ ^2F_{7/2}$	918.31	7.518e−01		2.273e+00	2.428e+00				5.947e+08	C+
$9g\ ^2G_{9/2}$	$7f\ ^2F_{7/2}$	1755.63	1.942e+00		1.122e+01	1.176e+01				4.202e+08	B
$9g\ ^2G_{9/2}$	$8f\ ^2F_{7/2}$	4299.90	7.958e+00		1.127e+02	1.167e+02				2.871e+08	C
$9g\ ^2G_{9/2}$	$6h\ ^2H_{11/2}$	922.73	3.277e−03		9.955e−03	1.072e−02				2.567e+06	E
$9g\ ^2G_{9/2}$	$7h\ ^2H_{11/2}$	1766.45	3.271e−02		1.902e−01	1.958e−01				6.993e+06	D+
$9g\ ^2G_{9/2}$	$8h\ ^2H_{11/2}$	4345.26	3.812e−01		5.453e+00	5.475e+00				1.347e+07	C
$9h\ ^2H_{11/2}$	$5g\ ^2G_{9/2}$	514.62	2.526e−01		4.279e−01	4.365e−01				5.302e+08	C
$9h\ ^2H_{11/2}$	$6g\ ^2G_{9/2}$	922.11	9.110e−01		2.766e+00	2.796e+00				5.955e+08	C+
$9h\ ^2H_{11/2}$	$7g\ ^2G_{9/2}$	1764.69	2.851e+00		1.656e+01	1.668e+01				5.088e+08	B
$9h\ ^2H_{11/2}$	$8g\ ^2G_{9/2}$	4336.52	1.307e+01		1.867e+02	1.878e+02				3.865e+08	C
$9h\ ^2H_{11/2}$	$7i\ ^2I_{13/2}$	1766.13	9.979e−03		5.802e−02	5.817e−02				1.778e+06	D

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Upper level	Lower level	λ [RCI]	gf [RCI]	gf Ref. [17]	S [RCI]	S [MBPT]	S Ref. [48]	S Ref. [20]	S Ref. [22]	A [RCI]	Unc.
$9h\ ^2H_{11/2}$	$8i\ ^2I_{13/2}$	4342.60	2.127e−01		3.041e+00	3.036e+00				6.271e+06	C
$9h\ ^2H_{9/2}$	$5g\ ^2G_{7/2}$	514.60	2.058e−01		3.487e−01	3.557e−01				5.185e+08	C
$9h\ ^2H_{9/2}$	$6g\ ^2G_{7/2}$	922.07	7.423e−01		2.253e+00	2.278e+00				5.824e+08	C+
$9h\ ^2H_{9/2}$	$7g\ ^2G_{7/2}$	1764.62	2.323e+00		1.349e+01	1.359e+01				4.975e+08	B
$9h\ ^2H_{9/2}$	$8g\ ^2G_{7/2}$	4336.30	1.065e+01		1.521e+02	1.530e+02				3.779e+08	C
$9h\ ^2H_{9/2}$	$5g\ ^2G_{9/2}$	514.63	4.676e−03		7.921e−03	8.080e−03				1.178e+07	E
$9h\ ^2H_{9/2}$	$6g\ ^2G_{9/2}$	922.12	1.687e−02		5.120e−02	5.177e−02				1.323e+07	D
$9h\ ^2H_{9/2}$	$7g\ ^2G_{9/2}$	1764.72	5.278e−02		3.067e−01	3.089e−01				1.131e+07	D+
$9h\ ^2H_{9/2}$	$8g\ ^2G_{9/2}$	4336.71	2.422e−01		3.457e+00	3.479e+00				8.589e+06	C
$9h\ ^2H_{9/2}$	$7i\ ^2I_{11/2}$	1766.11	8.425e−03		4.898e−02	4.911e−02				1.802e+06	D
$9h\ ^2H_{9/2}$	$8i\ ^2I_{11/2}$	4342.59	1.796e−01		2.568e+00	2.563e+00				6.354e+06	C
$9i\ ^2I_{11/2}$	$6h\ ^2H_{9/2}$	922.50	5.971e−01		1.813e+00	1.817e+00				3.900e+08	C+
$9i\ ^2I_{11/2}$	$7h\ ^2H_{9/2}$	1765.65	2.976e+00		1.730e+01	1.731e+01				5.305e+08	B
$9i\ ^2I_{11/2}$	$8h\ ^2H_{9/2}$	4340.51	1.683e+01		2.405e+02	2.409e+02				4.966e+08	C
$9i\ ^2I_{11/2}$	$6h\ ^2H_{11/2}$	922.53	9.183e−03		2.789e−02	2.795e−02				5.998e+06	E
$9i\ ^2I_{11/2}$	$7h\ ^2H_{11/2}$	1765.72	4.577e−02		2.661e−01	2.663e−01				8.160e+06	D+
$9i\ ^2I_{11/2}$	$8h\ ^2H_{11/2}$	4340.82	2.590e−01		3.701e+00	3.706e+00				7.640e+06	C
$9i\ ^2I_{13/2}$	$6h\ ^2H_{11/2}$	922.52	7.073e−01		2.148e+00	2.153e+00				3.959e+08	C+
$9i\ ^2I_{13/2}$	$7h\ ^2H_{11/2}$	1765.70	3.525e+00		2.049e+01	2.051e+01				5.387e+08	B
$9i\ ^2I_{13/2}$	$8h\ ^2H_{11/2}$	4340.67	1.994e+01		2.849e+02	2.853e+02				5.042e+08	C
$9p\ ^2P_{1/2}$	$3s\ ^2S_{1/2}$	93.95	3.783e−03		1.170e−03	2.034e−03				1.429e+09	E
$9p\ ^2P_{1/2}$	$4s\ ^2S_{1/2}$	205.09	6.222e−03		4.201e−03	6.869e−03				4.933e+08	E
$9p\ ^2P_{1/2}$	$5s\ ^2S_{1/2}$	390.42	1.024e−02		1.316e−02	1.899e−02				2.240e+08	E
$9p\ ^2P_{1/2}$	$6s\ ^2S_{1/2}$	714.78	1.799e−02		4.234e−02	5.470e−02				1.175e+08	D
$9p\ ^2P_{1/2}$	$7s\ ^2S_{1/2}$	1363.94	3.654e−02		1.641e−01	1.914e−01				6.550e+07	D+
$9p\ ^2P_{1/2}$	$8s\ ^2S_{1/2}$	3162.21	9.828e−02		1.023e+00	1.071e+00				3.278e+07	C
$9p\ ^2P_{1/2}$	$3d\ ^2D_{3/2}$	136.76	1.325e−03		5.963e−04	1.561e−03				2.362e+08	E
$9p\ ^2P_{1/2}$	$4d\ ^2D_{3/2}$	273.21	5.682e−03		5.111e−03	9.860e−03				2.539e+08	E
$9p\ ^2P_{1/2}$	$5d\ ^2D_{3/2}$	504.69	1.744e−02		2.898e−02	4.520e−02				2.284e+08	E
$9p\ ^2P_{1/2}$	$6d\ ^2D_{3/2}$	928.06	5.199e−02		1.589e−01	2.158e−01				2.013e+08	D+
$9p\ ^2P_{3/2}$	$3s\ ^2S_{1/2}$	93.95	7.417e−03		2.294e−03	4.004e−03				1.401e+09	E
$9p\ ^2P_{3/2}$	$4s\ ^2S_{1/2}$	205.06	1.214e−02		8.198e−03	1.348e−02				4.816e+08	E
$9p\ ^2P_{3/2}$	$5s\ ^2S_{1/2}$	390.31	1.991e−02		2.559e−02	3.708e−02				2.180e+08	E
$9p\ ^2P_{3/2}$	$6s\ ^2S_{1/2}$	714.40	3.484e−02		8.194e−02	1.062e−01				1.138e+08	D+
$9p\ ^2P_{3/2}$	$7s\ ^2S_{1/2}$	1362.55	7.031e−02		3.154e−01	3.689e−01				6.316e+07	D+
$9p\ ^2P_{3/2}$	$8s\ ^2S_{1/2}$	3154.75	1.865e−01		1.937e+00	2.029e+00				3.125e+07	C
$9p\ ^2P_{3/2}$	$3d\ ^2D_{3/2}$	136.74	2.634e−04		1.186e−04	3.131e−04				2.349e+07	E
$9p\ ^2P_{3/2}$	$4d\ ^2D_{3/2}$	273.15	1.130e−03		1.017e−03	1.970e−03				2.527e+07	E
$9p\ ^2P_{3/2}$	$5d\ ^2D_{3/2}$	504.50	3.473e−03		5.768e−03	9.010e−03				2.275e+07	E

Table S1 – continued from previous page

Upper level	Lower level	λ [RCI]	gf [RCI]	gf Ref. [17]	S [RCI]	S [MBPT]	S Ref. [48]	S Ref. [20]	S Ref. [22]	A [RCI]	Unc.
$9p\ ^2P_{3/2}$	$6d\ ^2D_{3/2}$	927.42	1.035e−02		3.160e−02	4.295e−02				2.007e+07	E
$9p\ ^2P_{3/2}$	$3d\ ^2D_{5/2}$	136.76	3.438e−03		1.548e−03	2.790e−03				3.065e+08	E
$9p\ ^2P_{3/2}$	$4d\ ^2D_{5/2}$	273.19	1.271e−02		1.143e−02	1.764e−02				2.839e+08	E
$9p\ ^2P_{3/2}$	$5d\ ^2D_{5/2}$	504.58	3.628e−02		6.027e−02	8.090e−02				2.376e+08	D
$9p\ ^2P_{3/2}$	$6d\ ^2D_{5/2}$	927.55	1.044e−01		3.187e−01	3.862e−01				2.023e+08	D+
$9p\ ^2P_{3/2}$	$7d\ ^2D_{5/2}$	1862.06	3.789e−01		2.323e+00	2.595e+00				1.822e+08	C+
$9p\ ^2P_{3/2}$	$8d\ ^2D_{5/2}$	5324.52	3.207e+00		5.622e+01	5.828e+01				1.887e+08	D+

Table S2: Wavelengths (λ , in Å) in vacuum, weighted oscillator strengths (gf, dimensionless), line strengths (S, in atomic units) and transition rates (A, in s^{-1}) for E1 transitions from the present (RCI and MBPT) and previous results of Sampson et al. [24], Liang et al. [22], and NIST ASD [48] for Kr^{25+}. The estimated uncertainty (Unc.) in the A values are presented in the last column.

Upper level	Lower level	λ [RCI]	λ Ref. [48]	S [RCI]	S [MBPT]	S Ref. [22]	gf [RCI]	gf Ref. [24]	A [RCI]	Unc.
$3d\ ^2D_{3/2}$	$3p\ ^2P_{1/2}$	141.06	140.89	1.829e−01	1.879e−01	1.860e−01	3.939e−01	4.030e−01	3.301e+10	A
$3d\ ^2D_{3/2}$	$3p\ ^2P_{3/2}$	165.54	165.16	3.657e−02	3.752e−02	3.751e−02	6.710e−02	6.880e−02	4.083e+09	A
$3d\ ^2D_{5/2}$	$3p\ ^2P_{3/2}$	160.13	159.92	3.311e−01	3.398e−01	3.384e−01	6.280e−01	6.432e−01	2.723e+10	A
$3p\ ^2P_{1/2}$	$3s\ ^2S_{1/2}$	220.20	220.06	1.208e−01	1.238e−01	1.239e−01	1.667e−01	1.706e−01	1.146e+10	A
$3p\ ^2P_{3/2}$	$3s\ ^2S_{1/2}$	178.90	178.99	2.455e−01	2.516e−01	2.513e−01	4.169e−01	4.266e−01	2.172e+10	A
$4d\ ^2D_{3/2}$	$3p\ ^2P_{1/2}$	22.27	22.26	5.663e−02	5.663e−02	5.616e−02	7.726e−01	7.618e−01	2.599e+12	A+
$4d\ ^2D_{3/2}$	$4p\ ^2P_{1/2}$	373.52		8.052e−01	8.099e−01	8.128e−01	6.548e−01		7.826e+09	B+
$4d\ ^2D_{3/2}$	$3p\ ^2P_{3/2}$	22.80		1.252e−02	1.253e−02	1.232e−02	1.668e−01	1.652e−01	5.351e+11	A
$4d\ ^2D_{3/2}$	$4p\ ^2P_{3/2}$	442.42		1.612e−01	1.621e−01	1.625e−01	1.107e−01		9.430e+08	B+
$4d\ ^2D_{5/2}$	$3p\ ^2P_{3/2}$	22.75	22.74	1.106e−01	1.107e−01	1.093e−01	1.476e+00	1.461e+00	3.171e+12	A+
$4d\ ^2D_{5/2}$	$4p\ ^2P_{3/2}$	425.63		1.457e+00	1.465e+00	1.467e+00	1.040e+00		6.381e+09	B+
$4f\ ^2F_{5/2}$	$3d\ ^2D_{3/2}$	25.62	25.62	3.129e−01	3.198e−01	3.174e−01	3.709e+00	3.709e+00	6.282e+12	A
$4f\ ^2F_{5/2}$	$3d\ ^2D_{5/2}$	25.75		2.256e−02	2.306e−02	2.290e−02	2.660e−01	2.658e−01	4.459e+11	A
$4f\ ^2F_{7/2}$	$3d\ ^2D_{5/2}$	25.73	25.73	4.504e−01	4.604e−01	4.579e−01	5.317e+00	5.332e+00	6.696e+12	A
$4p\ ^2P_{1/2}$	$3s\ ^2S_{1/2}$	21.38	21.37	1.432e−02	1.410e−02	1.365e−02	2.034e−01	2.054e−01	1.484e+12	A
$4p\ ^2P_{1/2}$	$4s\ ^2S_{1/2}$	538.09		4.396e−01	4.421e−01	4.477e−01	2.482e−01		2.859e+09	B+
$4p\ ^2P_{1/2}$	$3d\ ^2D_{3/2}$	28.45		9.745e−03	9.392e−03	9.282e−03	1.040e−01	1.000e−01	4.286e+11	B+
$4p\ ^2P_{3/2}$	$3s\ ^2S_{1/2}$	21.19	21.18	2.525e−02	2.481e−02	2.439e−02	3.619e−01	3.640e−01	1.344e+12	A+
$4p\ ^2P_{3/2}$	$4s\ ^2S_{1/2}$	439.49		8.882e−01	8.932e−01	8.982e−01	6.139e−01		5.300e+09	B+
$4p\ ^2P_{3/2}$	$3d\ ^2D_{3/2}$	28.12		1.696e−03	1.633e−03	1.604e−03	1.832e−02	1.760e−02	3.864e+10	B+
$4p\ ^2P_{3/2}$	$3d\ ^2D_{5/2}$	28.28		1.585e−02	1.521e−02	1.517e−02	1.702e−01	1.632e−01	3.549e+11	B+
$4s\ ^2S_{1/2}$	$3p\ ^2P_{1/2}$	24.77	24.77	8.748e−03	8.560e−03	7.975e−03	1.073e−01	1.000e−01	5.834e+11	A
$4s\ ^2S_{1/2}$	$3p\ ^2P_{3/2}$	25.43	25.42	2.040e−02	1.997e−02	1.893e−02	2.437e−01	2.292e−01	1.257e+12	A

Table S2 – continued from previous page

Upper level	Lower level	λ [RCI]	λ Ref. [48]	S [RCI]	S [MBPT]	S Ref. [22]	gf [RCI]	gf Ref. [24]	A [RCI]	Unc.
$5d\ ^2D_{3/2}$	$3p\ ^2P_{1/2}$	16.06	16.07	1.171e−02	1.186e−02	1.124e−02	2.216e−01	2.222e−01	1.432e+12	A
$5d\ ^2D_{3/2}$	$4p\ ^2P_{1/2}$	49.93	49.93	1.137e−01	1.137e−01	1.110e−01	6.919e−01		4.628e+11	A+
$5d\ ^2D_{3/2}$	$5p\ ^2P_{1/2}$	765.14		2.222e+00	2.226e+00	2.246e+00	8.823e−01		2.513e+09	C+
$5d\ ^2D_{3/2}$	$3p\ ^2P_{3/2}$	16.34		2.480e−03	2.514e−03	2.411e−03	4.612e−02	4.640e−02	2.882e+11	B+
$5d\ ^2D_{3/2}$	$4p\ ^2P_{3/2}$	50.99		2.563e−02	2.562e−02	2.500e−02	1.527e−01		9.793e+10	A+
$5d\ ^2D_{3/2}$	$5p\ ^2P_{3/2}$	909.49		4.455e−01	4.462e−01	4.477e−01	1.488e−01		2.999e+08	C+
$5d\ ^2D_{3/2}$	$4f\ ^2F_{5/2}$	61.95		1.868e−02	1.877e−02	1.841e−02	9.160e−02		3.980e+10	A
$5d\ ^2D_{5/2}$	$3p\ ^2P_{3/2}$	16.32	16.34	2.216e−02	2.242e−02	2.176e−02	4.124e−01	4.152e−01	1.721e+12	A+
$5d\ ^2D_{5/2}$	$4p\ ^2P_{3/2}$	50.86	50.86	2.250e−01	2.250e−01	2.205e−01	1.344e+00		5.777e+11	A+
$5d\ ^2D_{5/2}$	$5p\ ^2P_{3/2}$	869.28		4.020e+00	4.027e+00	4.044e+00	1.405e+00		2.067e+09	C+
$5d\ ^2D_{5/2}$	$4f\ ^2F_{5/2}$	61.75		1.280e−03	1.286e−03	1.260e−03	6.298e−03		1.836e+09	B+
$5d\ ^2D_{5/2}$	$4f\ ^2F_{7/2}$	61.89		2.608e−02	2.618e−02	2.587e−02	1.280e−01		3.715e+10	A+
$5f\ ^2F_{5/2}$	$3d\ ^2D_{3/2}$	17.93	17.94	3.807e−02	3.981e−02	3.928e−02	6.450e−01	6.700e−01	2.231e+12	B+
$5f\ ^2F_{5/2}$	$4d\ ^2D_{3/2}$	55.70	55.71	5.577e−01	5.609e−01	5.554e−01	3.041e+00		1.090e+12	A+
$5f\ ^2F_{5/2}$	$3d\ ^2D_{5/2}$	17.99		2.712e−03	2.840e−03	2.803e−03	4.578e−02	4.740e−02	1.572e+11	B+
$5f\ ^2F_{5/2}$	$4d\ ^2D_{5/2}$	55.98		4.052e−02	4.072e−02	4.024e−02	2.199e−01		7.800e+10	A+
$5f\ ^2F_{7/2}$	$3d\ ^2D_{5/2}$	17.99	17.99	5.441e−02	5.698e−02	5.659e−02	9.188e−01	9.576e−01	2.367e+12	B+
$5f\ ^2F_{7/2}$	$4d\ ^2D_{5/2}$	55.92	55.93	8.063e−01	8.102e−01	8.045e−01	4.380e+00		1.168e+12	A+
$5g\ ^2G_{7/2}$	$4f\ ^2F_{5/2}$	59.42	59.38	1.558e+00	1.568e+00	1.567e+00	7.967e+00		1.882e+12	A+
$5g\ ^2G_{7/2}$	$4f\ ^2F_{7/2}$	59.54		5.788e−02	5.824e−02	5.822e−02	2.953e−01		6.946e+10	A+
$5g\ ^2G_{9/2}$	$4f\ ^2F_{7/2}$	59.51	59.46	2.024e+00	2.037e+00	2.040e+00	1.033e+01		1.946e+12	A+
$5p\ ^2P_{1/2}$	$3s\ ^2S_{1/2}$	15.27		2.935e−03	2.911e−03	2.532e−03	5.838e−02	5.860e−02	8.353e+11	B+
$5p\ ^2P_{1/2}$	$4s\ ^2S_{1/2}$	48.59	48.59	3.488e−02	3.473e−02	3.300e−02	2.180e−01		3.080e+11	A+
$5p\ ^2P_{1/2}$	$5s\ ^2S_{1/2}$	1074.40		1.146e+00	1.147e+00	1.165e+00	3.239e−01		9.357e+08	C+
$5p\ ^2P_{1/2}$	$3d\ ^2D_{3/2}$	18.56		1.125e−03	1.050e−03	9.627e−04	1.841e−02	1.720e−02	1.782e+11	B
$5p\ ^2P_{1/2}$	$4d\ ^2D_{3/2}$	62.33		4.818e−02	4.787e−02	4.593e−02	2.348e−01		2.016e+11	A+
$5p\ ^2P_{3/2}$	$3s\ ^2S_{1/2}$	15.22	15.21	5.387e−03	5.325e−03	4.821e−03	1.075e−01	1.076e−01	7.741e+11	A
$5p\ ^2P_{3/2}$	$4s\ ^2S_{1/2}$	48.11	48.11	6.066e−02	6.035e−02	5.895e−02	3.830e−01		2.760e+11	A+
$5p\ ^2P_{3/2}$	$5s\ ^2S_{1/2}$	878.59		2.306e+00	2.309e+00	2.326e+00	7.972e−01		1.722e+09	C+
$5p\ ^2P_{3/2}$	$3d\ ^2D_{3/2}$	18.49		2.020e−04	1.877e−04	1.706e−04	3.318e−03	3.200e−03	1.618e+10	B
$5p\ ^2P_{3/2}$	$4d\ ^2D_{3/2}$	61.53		8.432e−03	8.377e−03	8.187e−03	4.163e−02		1.833e+10	A
$5p\ ^2P_{3/2}$	$3d\ ^2D_{5/2}$	18.56		1.855e−03	1.733e−03	1.651e−03	3.035e−02	2.880e−02	1.469e+11	B
$5p\ ^2P_{3/2}$	$4d\ ^2D_{5/2}$	61.87		7.876e−02	7.801e−02	7.716e−02	3.867e−01		1.684e+11	A+
$5s\ ^2S_{1/2}$	$3p\ ^2P_{1/2}$	16.66		1.253e−03	1.220e−03	9.577e−04	2.284e−02	2.120e−02	2.744e+11	B+
$5s\ ^2S_{1/2}$	$4p\ ^2P_{1/2}$	56.21		3.269e−02	3.265e−02	3.035e−02	1.767e−01		1.865e+11	A+
$5s\ ^2S_{1/2}$	$3p\ ^2P_{3/2}$	16.96		2.813e−03	2.747e−03	2.411e−03	5.039e−02	4.720e−02	5.845e+11	B+
$5s\ ^2S_{1/2}$	$4p\ ^2P_{3/2}$	57.56		7.534e−02	7.519e−02	7.074e−02	3.976e−01		4.002e+11	A+
$6d\ ^2D_{3/2}$	$3p\ ^2P_{1/2}$	13.96		4.469e−03	4.584e−03	3.698e−03	9.724e−02		8.319e+11	B+
$6d\ ^2D_{3/2}$	$4p\ ^2P_{1/2}$	34.02		2.402e−02	2.417e−02	2.120e−02	2.144e−01		3.089e+11	A+

Table S2 – continued from previous page

Upper level	Lower level	λ [RCI]	λ Ref. [48]	S [RCI]	S [MBPT]	S Ref. [22]	gf [RCI]	gf Ref. [24]	A [RCI]	Unc.
$6d\ ^2D_{3/2}$	$5p\ ^2P_{1/2}$	93.71		2.051e−01	2.056e−01	1.936e−01	6.649e−01		1.263e+11	A+
$6d\ ^2D_{3/2}$	$6p\ ^2P_{1/2}$	1359.22		4.900e+00	4.901e+00	5.024e+00	1.095e+00		9.884e+08	C
$6d\ ^2D_{3/2}$	$3p\ ^2P_{3/2}$	14.17		9.312e−04	9.565e−04	8.541e−04	1.996e−02		1.658e+11	B+
$6d\ ^2D_{3/2}$	$4p\ ^2P_{3/2}$	34.51		5.180e−03	5.210e−03	4.815e−03	4.559e−02		6.383e+10	A
$6d\ ^2D_{3/2}$	$5p\ ^2P_{3/2}$	95.57		4.683e−02	4.693e−02	4.492e−02	1.488e−01		2.717e+10	A
$6d\ ^2D_{3/2}$	$4f\ ^2F_{5/2}$	39.21		2.009e−03	2.089e−03	1.763e−03	1.557e−02		1.689e+10	B+
$6d\ ^2D_{3/2}$	$5f\ ^2F_{5/2}$	114.13		8.462e−02	8.527e−02	8.210e−02	2.252e−01		2.883e+10	A
$6d\ ^2D_{5/2}$	$3p\ ^2P_{3/2}$	14.16		8.463e−03	8.558e−03	7.770e−03	1.815e−01		1.006e+12	A
$6d\ ^2D_{5/2}$	$4p\ ^2P_{3/2}$	34.47		4.637e−02	4.621e−02	4.326e−02	4.087e−01		3.824e+11	A+
$6d\ ^2D_{5/2}$	$5p\ ^2P_{3/2}$	95.22		4.095e−01	4.106e−01	3.957e−01	1.306e+00		1.601e+11	A
$6d\ ^2D_{5/2}$	$6p\ ^2P_{3/2}$	1522.45		8.848e+00	8.868e+00	8.965e+00	1.765e+00		8.467e+08	C
$6d\ ^2D_{5/2}$	$4f\ ^2F_{5/2}$	39.15		1.409e−04	1.438e−04	1.222e−04	1.094e−03		7.933e+08	C+
$6d\ ^2D_{5/2}$	$5f\ ^2F_{5/2}$	113.63		5.771e−03	5.855e−03	5.644e−03	1.543e−02		1.328e+09	B+
$6d\ ^2D_{5/2}$	$4f\ ^2F_{7/2}$	39.20		2.865e−03	2.917e−03	2.594e−03	2.220e−02		1.606e+10	B+
$6d\ ^2D_{5/2}$	$5f\ ^2F_{7/2}$	113.86		1.174e−01	1.191e−01	1.162e−01	3.133e−01		2.687e+10	A
$6f\ ^2F_{5/2}$	$3d\ ^2D_{3/2}$	15.41		1.172e−02	1.248e−02	1.189e−02	2.310e−01		1.081e+12	B+
$6f\ ^2F_{5/2}$	$4d\ ^2D_{3/2}$	36.96		8.765e−02	8.887e−02	8.587e−02	7.204e−01		5.863e+11	A+
$6f\ ^2F_{5/2}$	$5d\ ^2D_{3/2}$	103.02		9.360e−01	9.397e−01	9.194e−01	2.760e+00		2.891e+11	A
$6f\ ^2F_{5/2}$	$3d\ ^2D_{5/2}$	15.46		8.257e−04	8.866e−04	8.558e−04	1.622e−02		7.544e+10	B
$6f\ ^2F_{5/2}$	$4d\ ^2D_{5/2}$	37.08		6.312e−03	6.380e−03	6.203e−03	5.171e−02		4.181e+10	A
$6f\ ^2F_{5/2}$	$5d\ ^2D_{5/2}$	103.56		6.867e−02	6.850e−02	6.707e−02	2.014e−01		2.088e+10	A
$6f\ ^2F_{5/2}$	$5g\ ^2G_{7/2}$	110.88		2.340e−02	2.331e−02	2.241e−02	6.412e−02		5.798e+09	A
$6f\ ^2F_{7/2}$	$3d\ ^2D_{5/2}$	15.46		1.659e−02	1.782e−02	1.731e−02	3.260e−01		1.137e+12	B
$6f\ ^2F_{7/2}$	$4d\ ^2D_{5/2}$	37.07		1.262e−01	1.275e−01	1.245e−01	1.034e+00		6.275e+11	A+
$6f\ ^2F_{7/2}$	$5d\ ^2D_{5/2}$	103.45		1.364e+00	1.360e+00	1.335e+00	4.004e+00		3.120e+11	A
$6f\ ^2F_{7/2}$	$5g\ ^2G_{9/2}$	110.87		2.987e−02	2.998e−02	2.918e−02	8.185e−02		5.552e+09	A
$6g\ ^2G_{7/2}$	$4f\ ^2F_{5/2}$	38.60		1.388e−01	1.407e−01	1.396e−01	1.092e+00		6.112e+11	A+
$6g\ ^2G_{7/2}$	$5f\ ^2F_{5/2}$	109.18		2.506e+00	2.514e+00	2.503e+00	6.971e+00		4.876e+11	A
$6g\ ^2G_{7/2}$	$4f\ ^2F_{7/2}$	38.66		5.129e−03	5.196e−03	5.158e−03	4.030e−02		2.249e+10	A
$6g\ ^2G_{7/2}$	$5f\ ^2F_{7/2}$	109.39		9.328e−02	9.360e−02	9.308e−02	2.590e−01		1.805e+10	A
$6g\ ^2G_{9/2}$	$4f\ ^2F_{7/2}$	38.65		1.798e−01	1.824e−01	1.813e−01	1.413e+00		6.312e+11	A+
$6g\ ^2G_{9/2}$	$5f\ ^2F_{7/2}$	109.32		3.257e+00	3.268e+00	3.258e+00	9.050e+00		5.051e+11	A
$6h\ ^2H_{11/2}$	$5g\ ^2G_{9/2}$	110.16		5.950e+00	5.963e+00	5.961e+00	1.641e+01		7.515e+11	A
$6h\ ^2H_{9/2}$	$5g\ ^2G_{7/2}$	110.10		4.844e+00	4.853e+00	4.851e+00	1.337e+01		7.355e+11	A
$6h\ ^2H_{9/2}$	$5g\ ^2G_{9/2}$	110.21		1.102e−01	1.105e−01	1.105e−01	3.038e−01		1.668e+10	A
$6p\ ^2P_{1/2}$	$3s\ ^2S_{1/2}$	13.26		1.132e−03	1.137e−03	7.316e−04	2.593e−02		4.920e+11	B+
$6p\ ^2P_{1/2}$	$4s\ ^2S_{1/2}$	32.77		6.894e−03	6.930e−03	5.421e−03	6.390e−02		1.984e+11	A
$6p\ ^2P_{1/2}$	$5s\ ^2S_{1/2}$	92.03		7.184e−02	7.187e−02	6.473e−02	2.371e−01		9.337e+10	A
$6p\ ^2P_{1/2}$	$6s\ ^2S_{1/2}$	1896.72		2.466e+00	2.466e+00	2.558e+00	3.950e−01		3.661e+08	D+

Table S2 – continued from previous page

Upper level	Lower level	λ [RCI]	λ Ref. [48]	S [RCI]	S [MBPT]	S Ref. [22]	gf [RCI]	gf Ref. [24]	A [RCI]	Unc.
$6p\ ^2P_{1/2}$	$3d\ ^2D_{3/2}$	15.67		3.526e−04	3.225e−04	2.311e−04	6.834e−03		9.279e+10	B
$6p\ ^2P_{1/2}$	$4d\ ^2D_{3/2}$	38.49		5.435e−03	5.390e−03	4.489e−03	4.289e−02		9.654e+10	A
$6p\ ^2P_{1/2}$	$5d\ ^2D_{3/2}$	115.90		1.454e−01	1.455e−01	1.354e−01	3.811e−01		9.462e+10	A
$6p\ ^2P_{3/2}$	$3s\ ^2S_{1/2}$	13.24		2.106e−03	2.108e−03	1.448e−03	4.833e−02		4.600e+11	B+
$6p\ ^2P_{3/2}$	$4s\ ^2S_{1/2}$	32.65		1.249e−02	1.254e−02	1.032e−02	1.163e−01		1.819e+11	A
$6p\ ^2P_{3/2}$	$5s\ ^2S_{1/2}$	91.05		1.239e−01	1.239e−01	1.160e−01	4.135e−01		8.317e+10	A+
$6p\ ^2P_{3/2}$	$6s\ ^2S_{1/2}$	1551.34		4.953e+00	4.954e+00	5.092e+00	9.698e−01		6.720e+08	C
$6p\ ^2P_{3/2}$	$3d\ ^2D_{3/2}$	15.64		6.390e−05	5.800e−05	4.110e−05	1.240e−03		8.449e+09	C+
$6p\ ^2P_{3/2}$	$4d\ ^2D_{3/2}$	38.32		9.805e−04	9.723e−04	8.398e−04	7.772e−03		8.826e+09	B+
$6p\ ^2P_{3/2}$	$5d\ ^2D_{3/2}$	114.34		2.556e−02	2.558e−02	2.457e−02	6.791e−02		8.661e+09	A
$6p\ ^2P_{3/2}$	$3d\ ^2D_{5/2}$	15.69		5.536e−04	5.333e−04	4.463e−04	1.071e−02		7.253e+10	B+
$6p\ ^2P_{3/2}$	$4d\ ^2D_{5/2}$	38.45		9.189e−03	8.972e−03	8.172e−03	7.259e−02		8.188e+10	A
$6p\ ^2P_{3/2}$	$5d\ ^2D_{5/2}$	115.01		2.417e−01	2.380e−01	2.316e−01	6.383e−01		8.047e+10	A
$6s\ ^2S_{1/2}$	$3p\ ^2P_{1/2}$	14.21		4.278e−04	4.226e−04	2.028e−04	9.143e−03		1.510e+11	B
$6s\ ^2S_{1/2}$	$4p\ ^2P_{1/2}$	35.55		4.354e−03	4.379e−03	3.224e−03	3.720e−02		9.817e+10	B+
$6s\ ^2S_{1/2}$	$5p\ ^2P_{1/2}$	106.29		8.709e−02	8.749e−02	7.856e−02	2.489e−01		7.346e+10	A
$6s\ ^2S_{1/2}$	$3p\ ^2P_{3/2}$	14.43		9.420e−04	9.379e−04	6.772e−04	1.983e−02		3.178e+11	B+
$6s\ ^2S_{1/2}$	$4p\ ^2P_{3/2}$	36.09		9.687e−03	9.723e−03	8.156e−03	8.154e−02		2.089e+11	A
$6s\ ^2S_{1/2}$	$5p\ ^2P_{3/2}$	108.69		1.995e−01	2.001e−01	1.843e−01	5.575e−01		1.574e+11	A
$7d\ ^2D_{3/2}$	$3p\ ^2P_{1/2}$	12.94		2.231e−03	2.329e−03		5.234e−02		5.209e+11	B+
$7d\ ^2D_{3/2}$	$4p\ ^2P_{1/2}$	28.56		9.279e−03	9.457e−03		9.870e−02		2.018e+11	A
$7d\ ^2D_{3/2}$	$5p\ ^2P_{1/2}$	61.37		4.291e−02	4.327e−02		2.124e−01		9.405e+10	A+
$7d\ ^2D_{3/2}$	$6p\ ^2P_{1/2}$	157.23		3.447e−01	3.446e−01		6.659e−01		4.492e+10	A
$7d\ ^2D_{3/2}$	$7p\ ^2P_{1/2}$	2193.77		9.394e+00	9.403e+00		1.301e+00		4.507e+08	D+
$7d\ ^2D_{3/2}$	$3p\ ^2P_{3/2}$	13.12		4.553e−04	4.814e−04		1.054e−02		1.021e+11	B
$7d\ ^2D_{3/2}$	$4p\ ^2P_{3/2}$	28.90		1.970e−03	2.003e−03		2.071e−02		4.133e+10	B+
$7d\ ^2D_{3/2}$	$5p\ ^2P_{3/2}$	62.16		9.365e−03	9.434e−03		4.577e−02		1.975e+10	A
$7d\ ^2D_{3/2}$	$6p\ ^2P_{3/2}$	160.18		7.913e−02	7.935e−02		1.501e−01		9.753e+09	B+
$7d\ ^2D_{3/2}$	$4f\ ^2F_{5/2}$	32.12		5.672e−04	6.478e−04		5.363e−03		8.667e+09	C+
$7d\ ^2D_{3/2}$	$5f\ ^2F_{5/2}$	69.51		9.313e−03	9.650e−03		4.070e−02		1.405e+10	B+
$7d\ ^2D_{3/2}$	$6f\ ^2F_{5/2}$	189.34		2.405e−01	2.422e−01		3.859e−01		1.795e+10	B+
$7d\ ^2D_{5/2}$	$3p\ ^2P_{3/2}$	13.12		4.109e−03	4.314e−03		9.512e−02		6.143e+11	B+
$7d\ ^2D_{5/2}$	$4p\ ^2P_{3/2}$	28.89		1.748e−02	1.783e−02		1.837e−01		2.447e+11	A
$7d\ ^2D_{5/2}$	$5p\ ^2P_{3/2}$	62.11		8.242e−02	8.337e−02		4.031e−01		1.161e+11	A+
$7d\ ^2D_{5/2}$	$6p\ ^2P_{3/2}$	159.88		6.904e−01	6.924e−01		1.312e+00		5.705e+10	B+
$7d\ ^2D_{5/2}$	$7p\ ^2P_{3/2}$	2506.63		1.703e+01	1.701e+01		2.063e+00		3.650e+08	D+
$7d\ ^2D_{5/2}$	$4f\ ^2F_{5/2}$	32.11		3.960e−05	4.470e−05		3.749e−04		4.042e+08	C+
$7d\ ^2D_{5/2}$	$5f\ ^2F_{5/2}$	69.45		6.417e−04	6.667e−04		2.807e−03		6.469e+08	B+
$7d\ ^2D_{5/2}$	$6f\ ^2F_{5/2}$	188.93		1.657e−02	1.666e−02		2.664e−02		8.297e+08	B+

Table S2 – continued from previous page

Upper level	Lower level	λ [RCI]	λ Ref. [48]	S [RCI]	S [MBPT]	S Ref. [22]	gf [RCI]	gf Ref. [24]	A [RCI]	Unc.
$7d\ ^2D_{5/2}$	$4f\ ^2F_{7/2}$	32.15		8.049e−04	9.043e−04		7.606e−03		8.182e+09	C+
$7d\ ^2D_{5/2}$	$5f\ ^2F_{7/2}$	69.54		1.302e−02	1.351e−02		5.689e−02		1.308e+10	B+
$7d\ ^2D_{5/2}$	$6f\ ^2F_{7/2}$	189.30		3.370e−01	3.384e−01		5.407e−01		1.678e+10	B+
$7f\ ^2F_{5/2}$	$3d\ ^2D_{3/2}$	14.21		5.244e−03	5.649e−03		1.121e−01		6.172e+11	B
$7f\ ^2F_{5/2}$	$4d\ ^2D_{3/2}$	30.72		2.954e−02	3.033e−02		2.921e−01		3.440e+11	A
$7f\ ^2F_{5/2}$	$5d\ ^2D_{3/2}$	65.80		1.572e−01	1.590e−01		7.256e−01		1.863e+11	A+
$7f\ ^2F_{5/2}$	$6d\ ^2D_{3/2}$	171.41		1.489e+00	1.496e+00		2.639e+00		9.987e+10	B+
$7f\ ^2F_{5/2}$	$3d\ ^2D_{5/2}$	14.25		3.742e−04	4.000e−04		7.976e−03		4.366e+10	B
$7f\ ^2F_{5/2}$	$4d\ ^2D_{5/2}$	30.81		2.113e−03	2.168e−03		2.083e−02		2.440e+10	B+
$7f\ ^2F_{5/2}$	$5d\ ^2D_{5/2}$	66.02		1.127e−02	1.146e−02		5.185e−02		1.323e+10	A
$7f\ ^2F_{5/2}$	$6d\ ^2D_{5/2}$	172.55		1.087e−01	1.094e−01		1.913e−01		7.145e+09	B+
$7f\ ^2F_{5/2}$	$5g\ ^2G_{7/2}$	68.92		2.301e−03	2.365e−03		1.014e−02		2.373e+09	B+
$7f\ ^2F_{5/2}$	$6g\ ^2G_{7/2}$	183.93		1.030e−01	1.033e−01		1.702e−01		5.592e+09	B+
$7f\ ^2F_{7/2}$	$3d\ ^2D_{5/2}$	14.25		7.531e−03	8.047e−03		1.605e−01		6.591e+11	B+
$7f\ ^2F_{7/2}$	$4d\ ^2D_{5/2}$	30.80		4.232e−02	4.340e−02		4.173e−01		3.667e+11	A
$7f\ ^2F_{7/2}$	$5d\ ^2D_{5/2}$	65.99		2.248e−01	2.286e−01		1.035e+00		1.981e+11	A+
$7f\ ^2F_{7/2}$	$6d\ ^2D_{5/2}$	172.37		2.155e+00	2.169e+00		3.797e+00		1.066e+11	B+
$7f\ ^2F_{7/2}$	$6g\ ^2G_{7/2}$	183.73		3.739e−03	3.751e−03		6.182e−03		1.527e+08	B+
$7f\ ^2F_{7/2}$	$5g\ ^2G_{9/2}$	68.93		2.953e−03	3.043e−03		1.301e−02		2.283e+09	B+
$7f\ ^2F_{7/2}$	$6g\ ^2G_{9/2}$	183.91		1.325e−01	1.330e−01		2.188e−01		5.394e+09	B+
$7g\ ^2G_{7/2}$	$4f\ ^2F_{5/2}$	31.87		3.675e−02	3.760e−02		3.503e−01		2.875e+11	A
$7g\ ^2G_{7/2}$	$5f\ ^2F_{5/2}$	68.35		3.083e−01	3.103e−01		1.370e+00		2.445e+11	A+
$7g\ ^2G_{7/2}$	$6f\ ^2F_{5/2}$	181.00		3.860e+00	3.873e+00		6.478e+00		1.649e+11	B+
$7g\ ^2G_{7/2}$	$4f\ ^2F_{7/2}$	31.91		1.354e−03	1.386e−03		1.289e−02		1.056e+10	B+
$7g\ ^2G_{7/2}$	$5f\ ^2F_{7/2}$	68.44		1.142e−02	1.149e−02		5.067e−02		9.021e+09	A
$7g\ ^2G_{7/2}$	$6f\ ^2F_{7/2}$	181.34		1.439e−01	1.444e−01		2.411e−01		6.112e+09	B+
$7g\ ^2G_{7/2}$	$6h\ ^2H_{9/2}$	183.12		3.770e−02	3.785e−02		6.254e−02		1.555e+09	B+
$7g\ ^2G_{9/2}$	$4f\ ^2F_{7/2}$	31.90		4.760e−02	4.871e−02		4.532e−01		2.970e+11	A
$7g\ ^2G_{9/2}$	$5f\ ^2F_{7/2}$	68.41		3.999e−01	4.026e−01		1.775e+00		2.530e+11	A+
$7g\ ^2G_{9/2}$	$6f\ ^2F_{7/2}$	181.18		5.021e+00	5.036e+00		8.418e+00		1.711e+11	B+
$7g\ ^2G_{9/2}$	$6h\ ^2H_{11/2}$	183.10		4.634e−02	4.626e−02		7.688e−02		1.530e+09	B+
$7h\ ^2H_{11/2}$	$5g\ ^2G_{9/2}$	68.75		4.468e−01	4.486e−01		1.974e+00		2.321e+11	A+
$7h\ ^2H_{11/2}$	$6g\ ^2G_{9/2}$	182.62		8.781e+00	8.792e+00		1.461e+01		2.434e+11	B+
$7h\ ^2H_{9/2}$	$5g\ ^2G_{7/2}$	68.72		3.631e−01	3.655e−01		1.605e+00		2.267e+11	A+
$7h\ ^2H_{9/2}$	$6g\ ^2G_{7/2}$	182.54		7.144e+00	7.155e+00		1.189e+01		2.380e+11	B+
$7h\ ^2H_{9/2}$	$5g\ ^2G_{9/2}$	68.77		8.244e−03	8.288e−03		3.641e−02		5.136e+09	A
$7h\ ^2H_{9/2}$	$6g\ ^2G_{9/2}$	182.72		1.628e−01	1.630e−01		2.706e−01		5.406e+09	B+
$7i\ ^2I_{11/2}$	$6h\ ^2H_{9/2}$	182.78		1.206e+01	1.207e+01		2.004e+01		3.334e+11	B+
$7i\ ^2I_{11/2}$	$6h\ ^2H_{11/2}$	182.92		1.857e−01	1.858e−01		3.084e−01		5.123e+09	B+

Table S2 – continued from previous page

Upper level	Lower level	λ [RCI]	λ Ref. [48]	S [RCI]	S [MBPT]	S Ref. [22]	gf [RCI]	gf Ref. [24]	A [RCI]	Unc.
$7i\ ^2I_{13/2}$	$6h\ ^2H_{11/2}$	182.86		1.429e+01	1.430e+01		2.375e+01		3.384e+11	B+
$7p\ ^2P_{1/2}$	$3s\ ^2S_{1/2}$	12.29		5.693e−04	5.827e−04		1.407e−02		3.104e+11	B+
$7p\ ^2P_{1/2}$	$4s\ ^2S_{1/2}$	27.46		2.629e−03	2.677e−03		2.909e−02		1.287e+11	B+
$7p\ ^2P_{1/2}$	$5s\ ^2S_{1/2}$	59.63		1.387e−02	1.390e−02		7.064e−02		6.626e+10	A
$7p\ ^2P_{1/2}$	$6s\ ^2S_{1/2}$	155.48		1.338e−01	1.326e−01		2.614e−01		3.606e+10	A
$7p\ ^2P_{1/2}$	$7s\ ^2S_{1/2}$	3047.74		4.670e+00	4.679e+00		4.655e−01		1.671e+08	D
$7p\ ^2P_{1/2}$	$3d\ ^2D_{3/2}$	14.35		1.621e−04	1.451e−04		3.433e−03		5.563e+10	C+
$7p\ ^2P_{1/2}$	$4d\ ^2D_{3/2}$	31.36		1.666e−03	1.667e−03		1.613e−02		5.470e+10	B+
$7p\ ^2P_{1/2}$	$5d\ ^2D_{3/2}$	68.81		1.609e−02	1.619e−02		7.102e−02		5.002e+10	A
$7p\ ^2P_{1/2}$	$6d\ ^2D_{3/2}$	193.47		3.420e−01	3.432e−01		5.369e−01		4.784e+10	B+
$7p\ ^2P_{3/2}$	$3s\ ^2S_{1/2}$	12.28		1.058e−03	1.088e−03		2.616e−02		2.890e+11	B+
$7p\ ^2P_{3/2}$	$4s\ ^2S_{1/2}$	27.41		4.800e−03	4.917e−03		5.320e−02		1.181e+11	A
$7p\ ^2P_{3/2}$	$5s\ ^2S_{1/2}$	59.39		2.491e−02	2.499e−02		1.274e−01		6.026e+10	A
$7p\ ^2P_{3/2}$	$6s\ ^2S_{1/2}$	153.84		2.305e−01	2.272e−01		4.552e−01		3.207e+10	A
$7p\ ^2P_{3/2}$	$7s\ ^2S_{1/2}$	2521.24		9.369e+00	9.386e+00		1.129e+00		2.961e+08	D+
$7p\ ^2P_{3/2}$	$3d\ ^2D_{3/2}$	14.33		2.980e−05	2.610e−05		6.312e−04		5.125e+09	C
$7p\ ^2P_{3/2}$	$4d\ ^2D_{3/2}$	31.30		2.997e−04	3.030e−04		2.909e−03		4.953e+09	B
$7p\ ^2P_{3/2}$	$5d\ ^2D_{3/2}$	68.49		2.903e−03	2.939e−03		1.288e−02		4.577e+09	B+
$7p\ ^2P_{3/2}$	$6d\ ^2D_{3/2}$	190.94		6.031e−02	6.053e−02		9.594e−02		4.388e+09	B+
$7p\ ^2P_{3/2}$	$3d\ ^2D_{5/2}$	14.37		2.666e−04	2.380e−04		5.635e−03		4.548e+10	C+
$7p\ ^2P_{3/2}$	$4d\ ^2D_{5/2}$	31.38		2.800e−03	2.785e−03		2.710e−02		4.588e+10	B+
$7p\ ^2P_{3/2}$	$5d\ ^2D_{5/2}$	68.73		2.684e−02	2.710e−02		1.186e−01		4.188e+10	A
$7p\ ^2P_{3/2}$	$6d\ ^2D_{5/2}$	192.35		5.609e−01	5.626e−01		8.857e−01		3.992e+10	B+
$7s\ ^2S_{1/2}$	$3p\ ^2P_{1/2}$	13.08		2.066e−04	2.067e−04		4.800e−03		9.361e+10	B
$7s\ ^2S_{1/2}$	$4p\ ^2P_{1/2}$	29.21		1.449e−03	1.474e−03		1.507e−02		5.889e+10	B+
$7s\ ^2S_{1/2}$	$5p\ ^2P_{1/2}$	64.47		1.122e−02	1.128e−02		5.287e−02		4.243e+10	A
$7s\ ^2S_{1/2}$	$6p\ ^2P_{1/2}$	179.33		1.911e−01	1.918e−01		3.237e−01		3.357e+10	B+
$7s\ ^2S_{1/2}$	$3p\ ^2P_{3/2}$	13.26		4.419e−04	4.548e−04		1.012e−02		1.920e+11	B
$7s\ ^2S_{1/2}$	$4p\ ^2P_{3/2}$	29.57		3.195e−03	3.228e−03		3.282e−02		1.252e+11	B+
$7s\ ^2S_{1/2}$	$5p\ ^2P_{3/2}$	65.34		2.481e−02	2.485e−02		1.153e−01		9.009e+10	A
$7s\ ^2S_{1/2}$	$6p\ ^2P_{3/2}$	183.18		4.342e−01	4.367e−01		7.199e−01		7.155e+10	B+
$8d\ ^2D_{3/2}$	$3p\ ^2P_{1/2}$	12.36		1.317e−03	1.389e−03		3.235e−02		3.529e+11	C+
$8d\ ^2D_{3/2}$	$4p\ ^2P_{1/2}$	25.88		4.721e−03	4.891e−03		5.542e−02		1.380e+11	B
$8d\ ^2D_{3/2}$	$5p\ ^2P_{1/2}$	50.19		1.676e−02	1.696e−02		1.015e−01		6.717e+10	B
$8d\ ^2D_{3/2}$	$6p\ ^2P_{1/2}$	100.09		7.171e−02	7.151e−02		2.176e−01		3.622e+10	B+
$8d\ ^2D_{3/2}$	$7p\ ^2P_{1/2}$	244.72		5.528e−01	5.452e−01		6.862e−01		1.911e+10	B+
$8d\ ^2D_{3/2}$	$8p\ ^2P_{1/2}$	3319.82		1.633e+01	1.639e+01		1.494e+00		2.261e+08	E
$8d\ ^2D_{3/2}$	$3p\ ^2P_{3/2}$	12.53		2.744e−04	2.849e−04		6.654e−03		7.073e+10	C+
$8d\ ^2D_{3/2}$	$4p\ ^2P_{3/2}$	26.16		9.936e−04	1.024e−03		1.154e−02		2.812e+10	C+

Table S2 – continued from previous page

Upper level	Lower level	λ [RCI]	λ Ref. [48]	S [RCI]	S [MBPT]	S Ref. [22]	gf [RCI]	gf Ref. [24]	A [RCI]	Unc.
$8d\ ^2D_{3/2}$	$5p\ ^2P_{3/2}$	50.71		3.560e−03	3.627e−03		2.132e−02		1.382e+10	C+
$8d\ ^2D_{3/2}$	$6p\ ^2P_{3/2}$	101.28		1.559e−02	1.571e−02		4.676e−02		7.601e+09	B
$8d\ ^2D_{3/2}$	$7p\ ^2P_{3/2}$	248.89		1.254e−01	1.264e−01		1.530e−01		4.118e+09	B+
$8d\ ^2D_{3/2}$	$4f\ ^2F_{5/2}$	28.77		2.607e−04	3.169e−04		2.753e−03		5.546e+09	C
$8d\ ^2D_{3/2}$	$5f\ ^2F_{5/2}$	55.50		2.741e−03	2.987e−03		1.500e−02		8.121e+09	C+
$8d\ ^2D_{3/2}$	$6f\ ^2F_{5/2}$	112.21		2.684e−02	2.774e−02		7.266e−02		9.624e+09	B+
$8d\ ^2D_{3/2}$	$7f\ ^2F_{5/2}$	292.31		5.392e−01	5.468e−01		5.603e−01		1.094e+10	B+
$8d\ ^2D_{5/2}$	$3p\ ^2P_{3/2}$	12.52		2.481e−03	2.554e−03		6.018e−02		4.265e+11	C+
$8d\ ^2D_{5/2}$	$4p\ ^2P_{3/2}$	26.15		8.790e−03	9.131e−03		1.021e−01		1.660e+11	B
$8d\ ^2D_{5/2}$	$5p\ ^2P_{3/2}$	50.69		3.127e−02	3.217e−02		1.874e−01		8.109e+10	B+
$8d\ ^2D_{5/2}$	$6p\ ^2P_{3/2}$	101.18		1.359e−01	1.385e−01		4.079e−01		4.429e+10	B+
$8d\ ^2D_{5/2}$	$7p\ ^2P_{3/2}$	248.28		1.093e+00	1.101e+00		1.337e+00		2.411e+10	B+
$8d\ ^2D_{5/2}$	$8p\ ^2P_{3/2}$	3814.94		2.968e+01	2.967e+01		2.363e+00		1.805e+08	E
$8d\ ^2D_{5/2}$	$4f\ ^2F_{5/2}$	28.76		1.870e−05	2.190e−05		1.975e−04		2.654e+08	C
$8d\ ^2D_{5/2}$	$5f\ ^2F_{5/2}$	55.47		1.882e−04	2.069e−04		1.031e−03		3.723e+08	C+
$8d\ ^2D_{5/2}$	$6f\ ^2F_{5/2}$	112.09		1.832e−03	1.920e−03		4.964e−03		4.393e+08	C+
$8d\ ^2D_{5/2}$	$7f\ ^2F_{5/2}$	291.47		3.729e−02	3.764e−02		3.886e−02		5.085e+08	B
$8d\ ^2D_{5/2}$	$4f\ ^2F_{7/2}$	28.79		3.718e−04	4.414e−04		3.923e−03		5.262e+09	C
$8d\ ^2D_{5/2}$	$5f\ ^2F_{7/2}$	55.53		3.813e−03	4.178e−03		2.086e−02		7.520e+09	B
$8d\ ^2D_{5/2}$	$6f\ ^2F_{7/2}$	112.22		3.730e−02	3.886e−02		1.010e−01		8.914e+09	B+
$8d\ ^2D_{5/2}$	$7f\ ^2F_{7/2}$	291.99		7.537e−01	7.644e−01		7.841e−01		1.022e+10	B+
$8f\ ^2F_{5/2}$	$3d\ ^2D_{3/2}$	13.53		2.848e−03	3.100e−03		6.397e−02		3.887e+11	C+
$8f\ ^2F_{5/2}$	$4d\ ^2D_{3/2}$	27.69		1.380e−02	1.436e−02		1.514e−01		2.195e+11	B
$8f\ ^2F_{5/2}$	$5d\ ^2D_{3/2}$	53.30		5.484e−02	5.603e−02		3.125e−01		1.223e+11	B+
$8f\ ^2F_{5/2}$	$6d\ ^2D_{3/2}$	106.41		2.551e−01	2.580e−01		7.281e−01		7.149e+10	B+
$8f\ ^2F_{5/2}$	$7d\ ^2D_{3/2}$	265.03		2.292e+00	2.279e+00		2.627e+00		4.158e+10	B+
$8f\ ^2F_{5/2}$	$3d\ ^2D_{5/2}$	13.56		1.972e−04	2.190e−04		4.417e−03		2.670e+10	C+
$8f\ ^2F_{5/2}$	$4d\ ^2D_{5/2}$	27.76		9.885e−04	1.023e−03		1.082e−02		1.560e+10	C+
$8f\ ^2F_{5/2}$	$5d\ ^2D_{5/2}$	53.45		3.942e−03	4.020e−03		2.241e−02		8.720e+09	B
$8f\ ^2F_{5/2}$	$6d\ ^2D_{5/2}$	106.85		1.850e−02	1.865e−02		5.259e−02		5.121e+09	B
$8f\ ^2F_{5/2}$	$7d\ ^2D_{5/2}$	265.84		1.659e−01	1.669e−01		1.896e−01		2.982e+09	B+
$8f\ ^2F_{5/2}$	$5g\ ^2G_{7/2}$	55.33		5.818e−04	6.687e−04		3.194e−03		1.160e+09	C+
$8f\ ^2F_{5/2}$	$6g\ ^2G_{7/2}$	111.10		1.060e−02	1.108e−02		2.899e−02		2.611e+09	B
$8f\ ^2F_{5/2}$	$7g\ ^2G_{7/2}$	283.30		2.856e−01	2.877e−01		3.062e−01		4.242e+09	B+
$8f\ ^2F_{7/2}$	$3d\ ^2D_{5/2}$	13.56		3.990e−03	4.407e−03		8.936e−02		4.051e+11	C+
$8f\ ^2F_{7/2}$	$4d\ ^2D_{5/2}$	27.76		1.975e−02	2.051e−02		2.161e−01		2.339e+11	B+
$8f\ ^2F_{7/2}$	$5d\ ^2D_{5/2}$	53.44		7.835e−02	8.031e−02		4.454e−01		1.301e+11	B+
$8f\ ^2F_{7/2}$	$6d\ ^2D_{5/2}$	106.81		3.662e−01	3.714e−01		1.041e+00		7.610e+10	B+
$8f\ ^2F_{7/2}$	$7d\ ^2D_{5/2}$	265.64		3.286e+00	3.307e+00		3.758e+00		4.440e+10	B+

Table S2 – continued from previous page

Upper level	Lower level	λ [RCI]	λ Ref. [48]	S [RCI]	S [MBPT]	S Ref. [22]	gf [RCI]	gf Ref. [24]	A [RCI]	Unc.
$8f\ ^2F_{7/2}$	$7g\ ^2G_{7/2}$	283.07		1.040e−02	1.046e−02		1.116e−02		1.161e+08	B
$8f\ ^2F_{7/2}$	$5g\ ^2G_{9/2}$	55.35		7.832e−04	8.599e−04		4.298e−03		1.170e+09	C+
$8f\ ^2F_{7/2}$	$6g\ ^2G_{9/2}$	111.14		1.381e−02	1.426e−02		3.775e−02		2.548e+09	B
$8f\ ^2F_{7/2}$	$7g\ ^2G_{9/2}$	283.46		3.697e−01	3.703e−01		3.961e−01		4.110e+09	B+
$8g\ ^2G_{7/2}$	$4f\ ^2F_{5/2}$	28.63		1.510e−02	1.556e−02		1.602e−01		1.630e+11	B
$8g\ ^2G_{7/2}$	$5f\ ^2F_{5/2}$	55.00		9.224e−02	9.353e−02		5.095e−01		1.404e+11	B+
$8g\ ^2G_{7/2}$	$6f\ ^2F_{5/2}$	110.16		5.296e−01	5.339e−01		1.460e+00		1.003e+11	B+
$8g\ ^2G_{7/2}$	$7f\ ^2F_{5/2}$	278.81		5.729e+00	5.750e+00		6.241e+00		6.695e+10	B+
$8g\ ^2G_{7/2}$	$4f\ ^2F_{7/2}$	28.66		5.546e−04	5.724e−04		5.879e−03		5.967e+09	C+
$8g\ ^2G_{7/2}$	$5f\ ^2F_{7/2}$	55.05		3.408e−03	3.456e−03		1.881e−02		5.174e+09	C+
$8g\ ^2G_{7/2}$	$6f\ ^2F_{7/2}$	110.29		1.966e−02	1.980e−02		5.414e−02		3.711e+09	B
$8g\ ^2G_{7/2}$	$7f\ ^2F_{7/2}$	279.28		2.135e−01	2.145e−01		2.322e−01		2.483e+09	B+
$8g\ ^2G_{7/2}$	$6h\ ^2H_{9/2}$	110.94		3.110e−03	3.310e−03		8.515e−03		5.768e+08	C+
$8g\ ^2G_{7/2}$	$7h\ ^2H_{9/2}$	282.08		1.569e−01	1.590e−01		1.690e−01		1.771e+09	B+
$8g\ ^2G_{9/2}$	$4f\ ^2F_{7/2}$	28.66		1.956e−02	2.014e−02		2.073e−01		1.684e+11	B+
$8g\ ^2G_{9/2}$	$5f\ ^2F_{7/2}$	55.04		1.197e−01	1.212e−01		6.604e−01		1.454e+11	B+
$8g\ ^2G_{9/2}$	$6f\ ^2F_{7/2}$	110.25		6.884e−01	6.929e−01		1.897e+00		1.041e+11	B+
$8g\ ^2G_{9/2}$	$7f\ ^2F_{7/2}$	279.07		7.441e+00	7.479e+00		8.099e+00		6.937e+10	B+
$8g\ ^2G_{9/2}$	$6h\ ^2H_{11/2}$	110.96		4.024e−03	4.046e−03		1.102e−02		5.968e+08	B
$8g\ ^2G_{9/2}$	$7h\ ^2H_{11/2}$	282.11		1.944e−01	1.944e−01		2.094e−01		1.755e+09	B+
$8h\ ^2H_{11/2}$	$5g\ ^2G_{9/2}$	55.27		1.064e−01	1.072e−01		5.851e−01		1.065e+11	B+
$8h\ ^2H_{11/2}$	$6g\ ^2G_{9/2}$	110.80		9.503e−01	9.526e−01		2.605e+00		1.180e+11	A
$8h\ ^2H_{11/2}$	$7g\ ^2G_{9/2}$	281.28		1.261e+01	1.263e+01		1.362e+01		9.570e+10	B+
$8h\ ^2H_{11/2}$	$7i\ ^2I_{13/2}$	281.85		7.187e−02	7.173e−02		7.746e−02		5.420e+08	B+
$8h\ ^2H_{9/2}$	$5g\ ^2G_{7/2}$	55.25		8.597e−02	8.741e−02		4.727e−01		1.033e+11	B+
$8h\ ^2H_{9/2}$	$6g\ ^2G_{7/2}$	110.77		7.700e−01	7.760e−01		2.111e+00		1.148e+11	B+
$8h\ ^2H_{9/2}$	$7g\ ^2G_{7/2}$	281.13		1.025e+01	1.027e+01		1.108e+01		9.347e+10	B+
$8h\ ^2H_{9/2}$	$5g\ ^2G_{9/2}$	55.28		1.950e−03	1.979e−03		1.072e−02		2.339e+09	C+
$8h\ ^2H_{9/2}$	$6g\ ^2G_{9/2}$	110.84		1.750e−02	1.762e−02		4.796e−02		2.604e+09	B
$8h\ ^2H_{9/2}$	$7g\ ^2G_{9/2}$	281.52		2.339e−01	2.343e−01		2.523e−01		2.124e+09	B+
$8h\ ^2H_{9/2}$	$7i\ ^2I_{11/2}$	281.94		6.101e−02	6.070e−02		6.573e−02		5.515e+08	B
$8i\ ^2I_{11/2}$	$6h\ ^2H_{9/2}$	110.86		7.896e−01	7.915e−01		2.164e+00		9.785e+10	B+
$8i\ ^2I_{11/2}$	$7h\ ^2H_{9/2}$	281.56		1.669e+01	1.671e+01		1.801e+01		1.263e+11	B+
$8i\ ^2I_{11/2}$	$6h\ ^2H_{11/2}$	110.91		1.213e−02	1.215e−02		3.323e−02		1.502e+09	B
$8i\ ^2I_{11/2}$	$7h\ ^2H_{11/2}$	281.81		2.574e−01	2.575e−01		2.774e−01		1.942e+09	B+
$8i\ ^2I_{13/2}$	$6h\ ^2H_{11/2}$	110.90		9.365e−01	9.376e−01		2.565e+00		9.937e+10	A
$8i\ ^2I_{13/2}$	$7h\ ^2H_{11/2}$	281.73		1.980e+01	1.981e+01		2.135e+01		1.282e+11	B+
$8p\ ^2P_{1/2}$	$3s\ ^2S_{1/2}$	11.75		3.266e−04	3.486e−04		8.444e−03		2.041e+11	C+
$8p\ ^2P_{1/2}$	$4s\ ^2S_{1/2}$	24.87		1.311e−03	1.376e−03		1.600e−02		8.628e+10	C+

Table S2 – continued from previous page

Upper level	Lower level	λ [RCI]	λ Ref. [48]	S [RCI]	S [MBPT]	S Ref. [22]	gf [RCI]	gf Ref. [24]	A [RCI]	Unc.
$8p\ ^2P_{1/2}$	$5s\ ^2S_{1/2}$	48.65		5.324e−03	5.309e−03		3.324e−02		4.684e+10	B
$8p\ ^2P_{1/2}$	$6s\ ^2S_{1/2}$	97.88		2.609e−02	2.505e−02		8.096e−02		2.818e+10	B+
$8p\ ^2P_{1/2}$	$7s\ ^2S_{1/2}$	243.12		2.343e−01	2.256e−01		2.927e−01		1.652e+10	B+
$8p\ ^2P_{1/2}$	$8s\ ^2S_{1/2}$	4610.93		8.055e+00	8.113e+00		5.307e−01		8.325e+07	E
$8p\ ^2P_{1/2}$	$3d\ ^2D_{3/2}$	13.61		9.180e−05	7.910e−05		2.050e−03		3.692e+10	C
$8p\ ^2P_{1/2}$	$4d\ ^2D_{3/2}$	28.04		7.450e−04	7.628e−04		8.072e−03		3.425e+10	C+
$8p\ ^2P_{1/2}$	$5d\ ^2D_{3/2}$	54.59		4.880e−03	4.966e−03		2.715e−02		3.039e+10	B
$8p\ ^2P_{1/2}$	$6d\ ^2D_{3/2}$	111.68		3.755e−02	3.778e−02		1.021e−01		2.731e+10	B+
$8p\ ^2P_{1/2}$	$7d\ ^2D_{3/2}$	300.36		7.016e−01	6.930e−01		7.095e−01		2.623e+10	B+
$8p\ ^2P_{3/2}$	$3s\ ^2S_{1/2}$	11.74		6.055e−04	6.535e−04		1.567e−02		1.895e+11	C+
$8p\ ^2P_{3/2}$	$4s\ ^2S_{1/2}$	24.84		2.395e−03	2.548e−03		2.928e−02		7.912e+10	C+
$8p\ ^2P_{3/2}$	$5s\ ^2S_{1/2}$	48.53		9.642e−03	9.690e−03		6.034e−02		4.272e+10	B
$8p\ ^2P_{3/2}$	$6s\ ^2S_{1/2}$	97.41		4.657e−02	4.478e−02		1.452e−01		2.552e+10	B+
$8p\ ^2P_{3/2}$	$7s\ ^2S_{1/2}$	240.26		4.023e−01	3.848e−01		5.087e−01		1.469e+10	B+
$8p\ ^2P_{3/2}$	$8s\ ^2S_{1/2}$	3762.84		1.616e+01	1.626e+01		1.305e+00		1.537e+08	E
$8p\ ^2P_{3/2}$	$3d\ ^2D_{3/2}$	13.60		1.650e−05	1.420e−05		3.693e−04		3.331e+09	C
$8p\ ^2P_{3/2}$	$4d\ ^2D_{3/2}$	28.00		1.340e−04	1.393e−04		1.454e−03		3.093e+09	C+
$8p\ ^2P_{3/2}$	$5d\ ^2D_{3/2}$	54.45		8.830e−04	9.094e−04		4.926e−03		2.771e+09	C+
$8p\ ^2P_{3/2}$	$6d\ ^2D_{3/2}$	111.08		6.794e−03	6.887e−03		1.858e−02		2.511e+09	B
$8p\ ^2P_{3/2}$	$7d\ ^2D_{3/2}$	296.02		1.245e−01	1.226e−01		1.277e−01		2.431e+09	B+
$8p\ ^2P_{3/2}$	$3d\ ^2D_{5/2}$	13.64		1.222e−04	1.281e−04		2.723e−03		2.442e+10	C+
$8p\ ^2P_{3/2}$	$4d\ ^2D_{5/2}$	28.07		1.279e−03	1.272e−03		1.384e−02		2.929e+10	C+
$8p\ ^2P_{3/2}$	$5d\ ^2D_{5/2}$	54.60		8.419e−03	8.344e−03		4.684e−02		2.620e+10	B
$8p\ ^2P_{3/2}$	$6d\ ^2D_{5/2}$	111.55		6.394e−02	6.341e−02		1.741e−01		2.333e+10	B+
$8p\ ^2P_{3/2}$	$7d\ ^2D_{5/2}$	297.04		1.132e+00	1.138e+00		1.158e+00		2.188e+10	B+
$8s\ ^2S_{1/2}$	$3p\ ^2P_{1/2}$	12.44		1.208e−04	1.233e−04		2.948e−03		6.350e+10	C+
$8s\ ^2S_{1/2}$	$4p\ ^2P_{1/2}$	26.23		6.885e−04	7.157e−04		7.974e−03		3.866e+10	C+
$8s\ ^2S_{1/2}$	$5p\ ^2P_{1/2}$	51.53		3.697e−03	3.727e−03		2.179e−02		2.738e+10	B
$8s\ ^2S_{1/2}$	$6p\ ^2P_{1/2}$	105.57		2.428e−02	2.411e−02		6.987e−02		2.091e+10	B+
$8s\ ^2S_{1/2}$	$7p\ ^2P_{1/2}$	280.25		3.731e−01	3.692e−01		4.044e−01		1.717e+10	B+
$8s\ ^2S_{1/2}$	$3p\ ^2P_{3/2}$	12.61		2.683e−04	2.677e−04		6.463e−03		1.356e+11	C+
$8s\ ^2S_{1/2}$	$4p\ ^2P_{3/2}$	26.52		1.510e−03	1.549e−03		1.730e−02		8.206e+10	C+
$8s\ ^2S_{1/2}$	$5p\ ^2P_{3/2}$	52.08		8.005e−03	8.088e−03		4.669e−02		5.740e+10	B
$8s\ ^2S_{1/2}$	$6p\ ^2P_{3/2}$	106.89		5.277e−02	5.281e−02		1.500e−01		4.378e+10	B+
$8s\ ^2S_{1/2}$	$7p\ ^2P_{3/2}$	285.73		8.339e−01	8.377e−01		8.865e−01		3.621e+10	B+
$9d\ ^2D_{3/2}$	$3p\ ^2P_{1/2}$	12.00		8.702e−04	9.394e−04		2.204e−02		2.554e+11	C+
$9d\ ^2D_{3/2}$	$4p\ ^2P_{1/2}$	24.31		2.786e−03	3.071e−03		3.481e−02		9.820e+10	C+
$9d\ ^2D_{3/2}$	$5p\ ^2P_{1/2}$	44.62		8.872e−03	9.073e−03		6.039e−02		5.058e+10	B
$9d\ ^2D_{3/2}$	$6p\ ^2P_{1/2}$	80.16		2.896e−02	2.855e−02		1.097e−01		2.848e+10	B+

Table S2 – continued from previous page

Upper level	Lower level	λ [RCI]	λ Ref. [48]	S [RCI]	S [MBPT]	S Ref. [22]	gf [RCI]	gf Ref. [24]	A [RCI]	Unc.
$9d\ ^2D_{3/2}$	$7p\ ^2P_{1/2}$	152.19		1.252e−01	1.134e−01		2.500e−01		1.800e+10	C+
$9d\ ^2D_{3/2}$	$8p\ ^2P_{1/2}$	359.01		8.589e−01	8.325e−01		7.267e−01		9.403e+09	B
$9d\ ^2D_{3/2}$	$9p\ ^2P_{1/2}$	4755.76		2.664e+01	2.652e+01		1.701e+00		1.254e+08	E
$9d\ ^2D_{3/2}$	$3p\ ^2P_{3/2}$	12.15		1.958e−04	1.904e−04		4.897e−03		5.533e+10	C+
$9d\ ^2D_{3/2}$	$4p\ ^2P_{3/2}$	24.56		5.838e−04	6.335e−04		7.219e−03		1.996e+10	C+
$9d\ ^2D_{3/2}$	$5p\ ^2P_{3/2}$	45.04		1.770e−03	1.907e−03		1.194e−02		9.815e+09	C+
$9d\ ^2D_{3/2}$	$6p\ ^2P_{3/2}$	80.92		5.860e−03	6.120e−03		2.200e−02		5.602e+09	B
$9d\ ^2D_{3/2}$	$7p\ ^2P_{3/2}$	153.80		2.424e−02	2.498e−02		4.787e−02		3.375e+09	B
$9d\ ^2D_{3/2}$	$8p\ ^2P_{3/2}$	365.42		2.008e−01	1.935e−01		1.669e−01		2.085e+09	B
$9d\ ^2D_{3/2}$	$4f\ ^2F_{5/2}$	26.85		1.818e−04	2.246e−04		2.057e−03		4.759e+09	C
$9d\ ^2D_{3/2}$	$5f\ ^2F_{5/2}$	48.78		1.224e−03	1.517e−03		7.622e−03		5.342e+09	C
$9d\ ^2D_{3/2}$	$6f\ ^2F_{5/2}$	87.75		7.795e−03	8.868e−03		2.698e−02		5.844e+09	C+
$9d\ ^2D_{3/2}$	$7f\ ^2F_{5/2}$	169.34		6.055e−02	6.433e−02		1.086e−01		6.317e+09	B+
$9d\ ^2D_{3/2}$	$8f\ ^2F_{5/2}$	427.07		1.089e+00	1.079e+00		7.748e−01		7.084e+09	B
$9d\ ^2D_{5/2}$	$3p\ ^2P_{3/2}$	12.14		1.948e−03	1.708e−03		4.872e−02		3.673e+11	C+
$9d\ ^2D_{5/2}$	$4p\ ^2P_{3/2}$	24.54		5.323e−03	5.654e−03		6.589e−02		1.216e+11	B
$9d\ ^2D_{5/2}$	$5p\ ^2P_{3/2}$	44.97		1.578e−02	1.695e−02		1.066e−01		5.859e+10	B
$9d\ ^2D_{5/2}$	$6p\ ^2P_{3/2}$	80.69		4.984e−02	5.415e−02		1.876e−01		3.203e+10	B
$9d\ ^2D_{5/2}$	$7p\ ^2P_{3/2}$	152.96		2.110e−01	2.198e−01		4.191e−01		1.991e+10	B+
$9d\ ^2D_{5/2}$	$8p\ ^2P_{3/2}$	360.73		1.704e+00	1.682e+00		1.435e+00		1.226e+10	B+
$9d\ ^2D_{5/2}$	$9p\ ^2P_{3/2}$	4794.37		4.758e+01	4.803e+01		3.015e+00		1.458e+08	E
$9d\ ^2D_{5/2}$	$4f\ ^2F_{5/2}$	26.82		1.680e−05	1.560e−05		1.899e−04		2.935e+08	C
$9d\ ^2D_{5/2}$	$5f\ ^2F_{5/2}$	48.69		8.540e−05	1.055e−04		5.329e−04		2.498e+08	C
$9d\ ^2D_{5/2}$	$6f\ ^2F_{5/2}$	87.48		4.922e−04	6.158e−04		1.709e−03		2.483e+08	D+
$9d\ ^2D_{5/2}$	$7f\ ^2F_{5/2}$	168.33		4.186e−03	4.461e−03		7.554e−03		2.964e+08	C+
$9d\ ^2D_{5/2}$	$8f\ ^2F_{5/2}$	420.68		7.282e−02	7.437e−02		5.258e−02		3.303e+08	B
$9d\ ^2D_{5/2}$	$4f\ ^2F_{7/2}$	26.85		3.458e−04	3.118e−04		3.912e−03		6.033e+09	C+
$9d\ ^2D_{5/2}$	$5f\ ^2F_{7/2}$	48.73		1.743e−03	2.116e−03		1.086e−02		5.085e+09	C
$9d\ ^2D_{5/2}$	$6f\ ^2F_{7/2}$	87.56		1.031e−02	1.241e−02		3.575e−02		5.185e+09	C
$9d\ ^2D_{5/2}$	$7f\ ^2F_{7/2}$	168.50		8.092e−02	9.013e−02		1.459e−01		5.712e+09	C+
$9d\ ^2D_{5/2}$	$8f\ ^2F_{7/2}$	421.18		1.412e+00	1.509e+00		1.019e+00		6.383e+09	C+
$9f\ ^2F_{5/2}$	$3d\ ^2D_{3/2}$	13.09		1.773e−03	1.921e−03		4.114e−02		2.668e+11	C+
$9f\ ^2F_{5/2}$	$4d\ ^2D_{3/2}$	25.94		7.546e−03	8.209e−03		8.837e−02		1.460e+11	B
$9f\ ^2F_{5/2}$	$5d\ ^2D_{3/2}$	47.16		2.596e−02	2.729e−02		1.672e−01		8.358e+10	B+
$9f\ ^2F_{5/2}$	$6d\ ^2D_{3/2}$	84.46		8.997e−02	9.261e−02		3.236e−01		5.042e+10	B+
$9f\ ^2F_{5/2}$	$7d\ ^2D_{3/2}$	160.90		4.172e−01	3.963e−01		7.877e−01		3.382e+10	B+
$9f\ ^2F_{5/2}$	$8d\ ^2D_{3/2}$	386.94		3.400e+00	3.357e+00		2.669e+00		1.981e+10	B
$9f\ ^2F_{5/2}$	$3d\ ^2D_{5/2}$	13.13		1.024e−04	1.351e−04		2.370e−03		1.529e+10	D+
$9f\ ^2F_{5/2}$	$4d\ ^2D_{5/2}$	26.00		5.669e−04	5.824e−04		6.623e−03		1.089e+10	C+

Table S2 – continued from previous page

Upper level	Lower level	λ [RCI]	λ Ref. [48]	S [RCI]	S [MBPT]	S Ref. [22]	gf [RCI]	gf Ref. [24]	A [RCI]	Unc.
$9f\ ^2F_{5/2}$	$5d\ ^2D_{5/2}$	47.28		1.996e−03	1.950e−03		1.283e−02		6.380e+09	C+
$9f\ ^2F_{5/2}$	$6d\ ^2D_{5/2}$	84.74		6.992e−03	6.656e−03		2.507e−02		3.881e+09	B
$9f\ ^2F_{5/2}$	$7d\ ^2D_{5/2}$	161.21		2.787e−02	2.869e−02		5.252e−02		2.247e+09	B+
$9f\ ^2F_{5/2}$	$8d\ ^2D_{5/2}$	388.41		2.458e−01	2.462e−01		1.922e−01		1.417e+09	B
$9f\ ^2F_{5/2}$	$6g\ ^2G_{7/2}$	87.40		2.697e−03	3.283e−03		9.374e−03		1.364e+09	C
$9f\ ^2F_{5/2}$	$7g\ ^2G_{7/2}$	167.46		3.063e−02	3.247e−02		5.555e−02		2.202e+09	B+
$9f\ ^2F_{5/2}$	$8g\ ^2G_{7/2}$	413.45		6.334e−01	6.433e−01		4.654e−01		3.027e+09	B
$9f\ ^2F_{7/2}$	$3d\ ^2D_{5/2}$	13.13		2.014e−03	2.719e−03		4.661e−02		2.255e+11	D+
$9f\ ^2F_{7/2}$	$4d\ ^2D_{5/2}$	26.00		1.125e−02	1.167e−02		1.315e−01		1.622e+11	B
$9f\ ^2F_{7/2}$	$5d\ ^2D_{5/2}$	47.27		3.964e−02	3.897e−02		2.547e−01		9.503e+10	B+
$9f\ ^2F_{7/2}$	$6d\ ^2D_{5/2}$	84.73		1.385e−01	1.328e−01		4.965e−01		5.766e+10	B+
$9f\ ^2F_{7/2}$	$7d\ ^2D_{5/2}$	161.17		5.498e−01	5.707e−01		1.036e+00		3.326e+10	B+
$9f\ ^2F_{7/2}$	$8d\ ^2D_{5/2}$	388.22		4.862e+00	4.873e+00		3.804e+00		2.105e+10	B
$9f\ ^2F_{7/2}$	$8g\ ^2G_{7/2}$	413.22		2.311e−02	2.340e−02		1.699e−02		8.297e+07	C+
$9f\ ^2F_{7/2}$	$5g\ ^2G_{9/2}$	48.76		3.574e−04	4.062e−04		2.226e−03		7.806e+08	C+
$9f\ ^2F_{7/2}$	$6g\ ^2G_{9/2}$	87.43		3.770e−03	4.224e−03		1.310e−02		1.429e+09	C+
$9f\ ^2F_{7/2}$	$7g\ ^2G_{9/2}$	167.56		3.954e−02	4.181e−02		7.168e−02		2.129e+09	B+
$9f\ ^2F_{7/2}$	$8g\ ^2G_{9/2}$	413.69		8.057e−01	8.281e−01		5.916e−01		2.882e+09	B
$9g\ ^2G_{7/2}$	$4f\ ^2F_{5/2}$	26.76		7.958e−03	8.207e−03		9.032e−02		1.051e+11	B
$9g\ ^2G_{7/2}$	$5f\ ^2F_{5/2}$	48.50		4.032e−02	4.143e−02		2.525e−01		8.953e+10	B+
$9g\ ^2G_{7/2}$	$6f\ ^2F_{5/2}$	86.85		1.676e−01	1.707e−01		5.862e−01		6.479e+10	B+
$9g\ ^2G_{7/2}$	$7f\ ^2F_{5/2}$	166.04		8.255e−01	8.340e−01		1.510e+00		4.567e+10	B+
$9g\ ^2G_{7/2}$	$8f\ ^2F_{5/2}$	406.66		8.284e+00	8.283e+00		6.188e+00		3.120e+10	B
$9g\ ^2G_{7/2}$	$4f\ ^2F_{7/2}$	26.79		2.944e−04	3.015e−04		3.338e−03		3.878e+09	C+
$9g\ ^2G_{7/2}$	$5f\ ^2F_{7/2}$	48.54		1.490e−03	1.528e−03		9.324e−03		3.300e+09	C+
$9g\ ^2G_{7/2}$	$6f\ ^2F_{7/2}$	86.93		6.223e−03	6.317e−03		2.174e−02		2.399e+09	B
$9g\ ^2G_{7/2}$	$7f\ ^2F_{7/2}$	166.19		3.046e−02	3.096e−02		5.567e−02		1.680e+09	B+
$9g\ ^2G_{7/2}$	$8f\ ^2F_{7/2}$	407.13		3.067e−01	3.093e−01		2.288e−01		1.151e+09	B
$9g\ ^2G_{7/2}$	$6h\ ^2H_{9/2}$	87.34		6.376e−04	8.244e−04		2.218e−03		2.424e+08	D+
$9g\ ^2G_{7/2}$	$7h\ ^2H_{9/2}$	167.19		1.440e−02	1.518e−02		2.616e−02		7.802e+08	B
$9g\ ^2G_{7/2}$	$8h\ ^2H_{9/2}$	411.21		4.250e−01	4.262e−01		3.140e−01		1.548e+09	B
$9g\ ^2G_{9/2}$	$4f\ ^2F_{7/2}$	26.79		1.022e−02	1.061e−02		1.159e−01		1.077e+11	B
$9g\ ^2G_{9/2}$	$5f\ ^2F_{7/2}$	48.54		5.188e−02	5.365e−02		3.247e−01		9.191e+10	B+
$9g\ ^2G_{9/2}$	$6f\ ^2F_{7/2}$	86.93		2.162e−01	2.213e−01		7.554e−01		6.668e+10	B+
$9g\ ^2G_{9/2}$	$7f\ ^2F_{7/2}$	166.19		1.058e+00	1.082e+00		1.934e+00		4.669e+10	B+
$9g\ ^2G_{9/2}$	$8f\ ^2F_{7/2}$	407.06		1.067e+01	1.077e+01		7.960e+00		3.204e+10	B
$9g\ ^2G_{9/2}$	$6h\ ^2H_{11/2}$	87.37		9.824e−04	1.008e−03		3.416e−03		2.985e+08	C+
$9g\ ^2G_{9/2}$	$7h\ ^2H_{11/2}$	167.27		1.808e−02	1.857e−02		3.283e−02		7.827e+08	B
$9g\ ^2G_{9/2}$	$8h\ ^2H_{11/2}$	411.66		5.280e−01	5.211e−01		3.896e−01		1.533e+09	B

Table S2 – continued from previous page

Upper level	Lower level	λ [RCI]	λ Ref. [48]	S [RCI]	S [MBPT]	S Ref. [22]	gf [RCI]	gf Ref. [24]	A [RCI]	Unc.
$9h\ ^2H_{11/2}$	$5g\ ^2G_{9/2}$	48.71		4.080e−02	4.107e−02		2.544e−01		5.959e+10	B+
$9h\ ^2H_{11/2}$	$6g\ ^2G_{9/2}$	87.27		2.623e−01	2.636e−01		9.129e−01		6.663e+10	B+
$9h\ ^2H_{11/2}$	$7g\ ^2G_{9/2}$	166.98		1.568e+00	1.574e+00		2.851e+00		5.684e+10	B+
$9h\ ^2H_{11/2}$	$8g\ ^2G_{9/2}$	410.17		1.762e+01	1.768e+01		1.305e+01		4.311e+10	B
$9h\ ^2H_{11/2}$	$7i\ ^2I_{13/2}$	167.18		5.551e−03	5.533e−03		1.009e−02		2.006e+08	B
$9h\ ^2H_{11/2}$	$8i\ ^2I_{13/2}$	410.97		2.869e−01	2.885e−01		2.120e−01		6.978e+08	B
$9h\ ^2H_{9/2}$	$5g\ ^2G_{7/2}$	48.70		3.220e−02	3.349e−02		2.009e−01		5.650e+10	B+
$9h\ ^2H_{9/2}$	$6g\ ^2G_{7/2}$	87.24		2.104e−01	2.148e−01		7.325e−01		6.420e+10	B+
$9h\ ^2H_{9/2}$	$7g\ ^2G_{7/2}$	166.90		1.271e+00	1.282e+00		2.314e+00		5.540e+10	B+
$9h\ ^2H_{9/2}$	$8g\ ^2G_{7/2}$	410.06		1.436e+01	1.438e+01		1.064e+01		4.220e+10	B
$9h\ ^2H_{9/2}$	$5g\ ^2G_{9/2}$	48.72		7.437e−04	7.574e−04		4.637e−03		1.303e+09	C+
$9h\ ^2H_{9/2}$	$6g\ ^2G_{9/2}$	87.29		4.806e−03	4.872e−03		1.673e−02		1.464e+09	B
$9h\ ^2H_{9/2}$	$7g\ ^2G_{9/2}$	167.04		2.889e−02	2.914e−02		5.254e−02		1.256e+09	B+
$9h\ ^2H_{9/2}$	$8g\ ^2G_{9/2}$	410.52		3.272e−01	3.282e−01		2.421e−01		9.583e+08	B
$9h\ ^2H_{9/2}$	$7i\ ^2I_{11/2}$	167.19		4.615e−03	4.681e−03		8.384e−03		2.001e+08	B
$9h\ ^2H_{9/2}$	$8i\ ^2I_{11/2}$	411.16		2.440e−01	2.441e−01		1.802e−01		7.111e+08	B
$9i\ ^2I_{11/2}$	$6h\ ^2H_{9/2}$	87.31		1.714e−01	1.719e−01		5.963e−01		4.348e+10	B+
$9i\ ^2I_{11/2}$	$7h\ ^2H_{9/2}$	167.08		1.638e+00	1.638e+00		2.979e+00		5.931e+10	B+
$9i\ ^2I_{11/2}$	$8h\ ^2H_{9/2}$	410.56		2.273e+01	2.274e+01		1.682e+01		5.545e+10	B
$9i\ ^2I_{11/2}$	$6h\ ^2H_{11/2}$	87.34		2.633e−03	2.637e−03		9.158e−03		6.673e+08	C+
$9i\ ^2I_{11/2}$	$7h\ ^2H_{11/2}$	167.17		2.517e−02	2.518e−02		4.573e−02		9.096e+08	B
$9i\ ^2I_{11/2}$	$8h\ ^2H_{11/2}$	411.07		3.508e−01	3.505e−01		2.592e−01		8.527e+08	B
$9i\ ^2I_{13/2}$	$6h\ ^2H_{11/2}$	87.33		2.031e−01	2.036e−01		7.065e−01		4.414e+10	B+
$9i\ ^2I_{13/2}$	$7h\ ^2H_{11/2}$	167.15		1.939e+00	1.941e+00		3.524e+00		6.010e+10	B+
$9i\ ^2I_{13/2}$	$8h\ ^2H_{11/2}$	410.93		2.696e+01	2.696e+01		1.993e+01		5.624e+10	B
$9p\ ^2P_{1/2}$	$3s\ ^2S_{1/2}$	11.40		1.942e−04	2.336e−04		5.174e−03		1.327e+11	C
$9p\ ^2P_{1/2}$	$4s\ ^2S_{1/2}$	23.38		7.048e−04	8.546e−04		9.159e−03		5.590e+10	C
$9p\ ^2P_{1/2}$	$5s\ ^2S_{1/2}$	43.23		2.763e−03	2.782e−03		1.941e−02		3.464e+10	C+
$9p\ ^2P_{1/2}$	$6s\ ^2S_{1/2}$	78.17		1.118e−02	9.623e−03		4.344e−02		2.371e+10	C+
$9p\ ^2P_{1/2}$	$7s\ ^2S_{1/2}$	149.51		4.975e−02	4.237e−02		1.011e−01		1.508e+10	C+
$9p\ ^2P_{1/2}$	$8s\ ^2S_{1/2}$	358.16		3.872e−01	3.640e−01		3.284e−01		8.539e+09	B
$9p\ ^2P_{1/2}$	$9s\ ^2S_{1/2}$	6534.30		1.329e+01	1.309e+01		6.179e−01		4.827e+07	E
$9p\ ^2P_{1/2}$	$3d\ ^2D_{3/2}$	13.15		6.040e−05	4.860e−05		1.396e−03		2.693e+10	C
$9p\ ^2P_{1/2}$	$4d\ ^2D_{3/2}$	26.15		3.663e−04	4.376e−04		4.255e−03		2.075e+10	C
$9p\ ^2P_{1/2}$	$5d\ ^2D_{3/2}$	47.86		2.061e−03	2.299e−03		1.308e−02		1.904e+10	C+
$9p\ ^2P_{1/2}$	$6d\ ^2D_{3/2}$	86.74		1.092e−02	1.161e−02		3.825e−02		1.696e+10	B
$9p\ ^2P_{1/2}$	$7d\ ^2D_{3/2}$	169.36		8.373e−02	7.623e−02		1.502e−01		1.746e+10	C+
$9p\ ^2P_{1/2}$	$8d\ ^2D_{3/2}$	439.76		1.284e+00	1.264e+00		8.868e−01		1.529e+10	B
$9p\ ^2P_{3/2}$	$3s\ ^2S_{1/2}$	11.40		3.848e−04	4.397e−04		1.026e−02		1.316e+11	C+

Table S2 – continued from previous page

Upper level	Lower level	λ [RCI]	λ Ref. [48]	S [RCI]	S [MBPT]	S Ref. [22]	gf [RCI]	gf Ref. [24]	A [RCI]	Unc.
$9p\ ^2P_{3/2}$	$4s\ ^2S_{1/2}$	23.36		1.375e−03	1.593e−03		1.789e−02		5.468e+10	C+
$9p\ ^2P_{3/2}$	$5s\ ^2S_{1/2}$	43.16		5.287e−03	5.130e−03		3.721e−02		3.330e+10	B
$9p\ ^2P_{3/2}$	$6s\ ^2S_{1/2}$	77.95		2.097e−02	1.750e−02		8.173e−02		2.243e+10	C
$9p\ ^2P_{3/2}$	$7s\ ^2S_{1/2}$	148.68		9.152e−02	7.551e−02		1.870e−01		1.410e+10	C
$9p\ ^2P_{3/2}$	$8s\ ^2S_{1/2}$	353.44		6.707e−01	6.192e−01		5.764e−01		7.694e+09	C+
$9p\ ^2P_{3/2}$	$9s\ ^2S_{1/2}$	5254.82		2.617e+01	2.622e+01		1.513e+00		9.136e+07	E
$9p\ ^2P_{3/2}$	$3d\ ^2D_{3/2}$	13.14		1.110e−05	8.740e−06		2.557e−04		2.469e+09	D+
$9p\ ^2P_{3/2}$	$4d\ ^2D_{3/2}$	26.12		7.080e−05	8.030e−05		8.230e−04		2.011e+09	C
$9p\ ^2P_{3/2}$	$5d\ ^2D_{3/2}$	47.78		3.961e−04	4.233e−04		2.519e−03		1.840e+09	C+
$9p\ ^2P_{3/2}$	$6d\ ^2D_{3/2}$	86.46		2.098e−03	2.138e−03		7.371e−03		1.644e+09	C+
$9p\ ^2P_{3/2}$	$7d\ ^2D_{3/2}$	168.30		1.572e−02	1.395e−02		2.837e−02		1.670e+09	C+
$9p\ ^2P_{3/2}$	$8d\ ^2D_{3/2}$	432.67		2.305e−01	2.240e−01		1.618e−01		1.441e+09	B
$9p\ ^2P_{3/2}$	$4d\ ^2D_{5/2}$	26.18		8.098e−04	7.236e−04		9.395e−03		2.285e+10	C+
$9p\ ^2P_{3/2}$	$5d\ ^2D_{5/2}$	47.89		4.833e−03	3.851e−03		3.065e−02		2.228e+10	D+
$9p\ ^2P_{3/2}$	$6d\ ^2D_{5/2}$	86.75		2.457e−02	1.955e−02		8.604e−02		1.907e+10	D+
$9p\ ^2P_{3/2}$	$7d\ ^2D_{5/2}$	168.63		1.248e−01	1.281e−01		2.248e−01		1.319e+10	B+
$9p\ ^2P_{3/2}$	$8d\ ^2D_{5/2}$	434.51		2.109e+00	2.078e+00		1.474e+00		1.302e+10	B
$9s\ ^2S_{1/2}$	$3p\ ^2P_{1/2}$	12.05		7.630e−05	8.490e−05		1.923e−03		4.419e+10	C
$9s\ ^2S_{1/2}$	$4p\ ^2P_{1/2}$	24.53		3.684e−04	4.422e−04		4.562e−03		2.529e+10	C
$9s\ ^2S_{1/2}$	$5p\ ^2P_{1/2}$	45.36		1.711e−03	1.838e−03		1.146e−02		1.858e+10	C+
$9s\ ^2S_{1/2}$	$6p\ ^2P_{1/2}$	82.56		7.806e−03	7.990e−03		2.872e−02		1.405e+10	B
$9s\ ^2S_{1/2}$	$7p\ ^2P_{1/2}$	161.10		4.900e−02	4.612e−02		9.239e−02		1.187e+10	B+
$9s\ ^2S_{1/2}$	$8p\ ^2P_{1/2}$	412.86		6.556e−01	6.521e−01		4.824e−01		9.438e+09	B
$9s\ ^2S_{1/2}$	$3p\ ^2P_{3/2}$	12.20		1.939e−04	1.805e−04		4.828e−03		1.082e+11	C+
$9s\ ^2S_{1/2}$	$4p\ ^2P_{3/2}$	24.78		8.073e−04	9.381e−04		9.895e−03		5.373e+10	C+
$9s\ ^2S_{1/2}$	$5p\ ^2P_{3/2}$	45.79		3.444e−03	3.922e−03		2.285e−02		3.634e+10	C+
$9s\ ^2S_{1/2}$	$6p\ ^2P_{3/2}$	83.37		1.580e−02	1.717e−02		5.758e−02		2.763e+10	B
$9s\ ^2S_{1/2}$	$7p\ ^2P_{3/2}$	162.90		9.540e−02	1.004e−01		1.779e−01		2.236e+10	B+
$9s\ ^2S_{1/2}$	$8p\ ^2P_{3/2}$	421.36		1.491e+00	1.474e+00		1.075e+00		2.019e+10	B

Table S3: Wavelengths (λ , in Å) in vacuum, weighted oscillator strengths (gf, dimensionless), line strengths (S, in atomic units) and transition rates (A, in s^{-1}) for E1 transitions from the present (RCI (corresponding to adjusted energy values)) and MBPT) and previous results of Sampson et al. [24], Matsushima et al. [18], Vilkas et al. [21], Johnson et al. [52] and NIST ASD [48] for Xe^{43+}. The estimated uncertainty (Unc.) in the A values are presented in the last column.

Upper level	**Lower level**	λ **[RCI]**	λ **Ref.**	gf **[RCI]**	gf **Ref. [24]**	S **[RCI]**	S **[MBPT]**	A **[RCI]**	A **Ref.**	**Unc.**
$3d\ ^2D_{3/2}$	$3p\ ^2P_{1/2}$	58.29	59.10 [48]	3.375e−01	3.430e−01	6.476e−02	6.610e−02	1.656e+11	1.66e+11 [21]	A
$3d\ ^2D_{3/2}$	$3p\ ^2P_{3/2}$	97.99		3.993e−02	4.080e−02	1.288e−02	1.312e−02	6.935e+09	6.96e+09 [21]	A+
$3d\ ^2D_{5/2}$	$3p\ ^2P_{3/2}$	85.00	84.80 [48]	4.219e−01	4.296e−01	1.181e−01	1.202e−01	6.492e+10	6.52e+10 [21]	A+
$3p\ ^2P_{1/2}$	$3s\ ^2S_{1/2}$	123.92	123.92 [48]	1.078e−01	1.094e−01	4.399e−02	4.481e−02	2.341e+10	2.34e+10 [21]	A+
									2.34e+10 [52]	
$3p\ ^2P_{3/2}$	$3s\ ^2S_{1/2}$	66.57	66.58 [48]	4.183e−01		9.169e−02	9.336e−02	1.578e+11	1.57e+11 [21]	A+
									1.57e+11 [52]	
$4d\ ^2D_{3/2}$	$3p\ ^2P_{1/2}$	8.03	8.03 [18]	8.268e−01	8.190e−01	2.185e−02	2.186e−02	2.139e+13		A+
$4d\ ^2D_{3/2}$	$4p\ ^2P_{1/2}$	149.38		5.756e−01		2.831e−01	2.844e−01	4.301e+10		A
$4d\ ^2D_{3/2}$	$3p\ ^2P_{3/2}$	8.50	8.50 [18]	1.963e−01	1.952e−01	5.494e−03	5.504e−03	4.527e+12		A+
$4d\ ^2D_{5/2}$	$3p\ ^2P_{3/2}$	8.45	8.45 [18]	1.699e+00	1.694e+00	4.729e−02	4.737e−02	2.643e+13		A+
$4d\ ^2D_{5/2}$	$4p\ ^2P_{3/2}$	219.99		7.113e−01		5.152e−01	5.174e−01	1.634e+10		A
$4f\ ^2F_{5/2}$	$3d\ ^2D_{3/2}$	9.08	9.08 [18]	3.767e+00	3.791e+00	1.126e−01	1.146e−01	5.081e+13		A+
$4f\ ^2F_{5/2}$	$3d\ ^2D_{5/2}$	9.21		2.723e−01	2.724e−01	8.256e−03	8.390e−03	3.569e+12		A+
$4f\ ^2F_{7/2}$	$3d\ ^2D_{5/2}$	9.19	9.19 [18]	5.435e+00	5.493e+00	1.644e−01	1.671e−01	5.371e+13		A+
$4p\ ^2P_{1/2}$	$3s\ ^2S_{1/2}$	7.94	7.94 [18]	2.424e−01	2.440e−01	6.337e−03	6.249e−03	1.282e+13		A+
$4p\ ^2P_{1/2}$	$4s\ ^2S_{1/2}$	298.00		1.606e−01		1.576e−01	1.583e−01	6.033e+09		B+
$4p\ ^2P_{1/2}$	$3d\ ^2D_{3/2}$	9.93	9.93 [18]	9.455e−02	9.240e−02	3.091e−03	2.993e−03	3.199e+12		B+
$4p\ ^2P_{3/2}$	$3s\ ^2S_{1/2}$	7.77	7.76 [18]	3.703e−01	3.710e−01	9.468e−03	9.292e−03	1.024e+13		A+
$4p\ ^2P_{3/2}$	$4s\ ^2S_{1/2}$	161.80		6.076e−01		3.236e−01	3.251e−01	3.870e+10		A
$4p\ ^2P_{3/2}$	$3d\ ^2D_{3/2}$	9.66		1.348e−02	1.320e−02	4.285e−04	4.133e−04	2.409e+11		B+
$4p\ ^2P_{3/2}$	$3d\ ^2D_{5/2}$	9.81	9.80 [18]	1.329e−01	1.296e−01	4.292e−03	4.145e−03	2.306e+12		B+
$4s\ ^2S_{1/2}$	$3p\ ^2P_{1/2}$	8.73	8.73 [18]	9.067e−02	8.600e−02	2.607e−03	2.559e−03	3.966e+12	3.97e+12 [52]	A+
$4s\ ^2S_{1/2}$	$3p\ ^2P_{3/2}$	9.30	9.29 [18]	2.491e−01	2.400e−01	7.623e−03	7.511e−03	9.610e+12	9.61e+12 [52]	A+
$5d\ ^2D_{3/2}$	$3p\ ^2P_{1/2}$	5.75	5.75 [18]	2.292e−01	2.298e−01	4.338e−03	4.374e−03	1.157e+13		A+
$5d\ ^2D_{3/2}$	$4p\ ^2P_{1/2}$	17.82	17.82 [18]	7.459e−01		4.377e−02	4.372e−02	3.916e+12		A+
$5d\ ^2D_{3/2}$	$5p\ ^2P_{1/2}$	301.97		7.846e−01		7.800e−01	7.810e−01	1.435e+10		B+
$5d\ ^2D_{3/2}$	$3p\ ^2P_{3/2}$	5.99		4.988e−02	5.000e−02	9.831e−04	9.930e−04	2.320e+12		A
$5d\ ^2D_{3/2}$	$4p\ ^2P_{3/2}$	18.77		1.860e−01		1.149e−02	1.149e−02	8.809e+11		A+
$5d\ ^2D_{3/2}$	$4f\ ^2F_{5/2}$	21.42		8.169e−02		5.761e−03	5.762e−03	2.969e+11		A+
$5d\ ^2D_{5/2}$	$3p\ ^2P_{3/2}$	5.97	5.97 [18]	4.418e−01	4.468e−01	8.690e−03	8.773e−03	1.376e+13		A+
$5d\ ^2D_{5/2}$	$4p\ ^2P_{3/2}$	18.64	18.64 [18]	1.588e+00		9.749e−02	9.741e−02	5.080e+12		A+
$5d\ ^2D_{5/2}$	$5p\ ^2P_{3/2}$	445.85		9.667e−01		1.419e+00	1.421e+00	5.407e+09		B
$5d\ ^2D_{5/2}$	$4f\ ^2F_{5/2}$	21.26		5.222e−03		3.655e−04	3.655e−04	1.284e+10		B+
$5d\ ^2D_{5/2}$	$4f\ ^2F_{7/2}$	21.39		1.097e−01		7.729e−03	7.727e−03	2.666e+11		A+

Table S3 – continued from previous page

Upper level	Lower level	λ [RCI]	λ Ref.	gf [RCI]	gf Ref. [24]	S [RCI]	S [MBPT]	A [RCI]	A Ref.	Unc.
$5f\ ^2F_{5/2}$	$3d\ ^2D_{3/2}$	6.32	6.32 [18]	6.347e−01	6.552e−01	1.321e−02	1.368e−02	1.766e+13		B+
$5f\ ^2F_{5/2}$	$4d\ ^2D_{3/2}$	19.69	19.70 [18]	3.145e+00		2.039e−01	2.047e−01	9.016e+12		A+
$5f\ ^2F_{5/2}$	$3d\ ^2D_{5/2}$	6.38		4.474e−02	4.560e−02	9.403e−04	9.717e−04	1.220e+12		B+
$5f\ ^2F_{5/2}$	$4d\ ^2D_{5/2}$	19.96		2.314e−01		1.521e−02	1.526e−02	6.459e+11		A+
$5f\ ^2F_{7/2}$	$3d\ ^2D_{5/2}$	6.38	6.38 [18]	9.042e−01	9.360e−01	1.899e−02	1.964e−02	1.853e+13		B+
$5f\ ^2F_{7/2}$	$4d\ ^2D_{5/2}$	19.90	19.91 [18]	4.576e+00		2.998e−01	3.009e−01	9.636e+12		A+
$5g\ ^2G_{7/2}$	$4f\ ^2F_{5/2}$	20.69	20.68 [18]	7.941e+00		5.408e−01	5.435e−01	1.547e+13		A+
$5g\ ^2G_{7/2}$	$4f\ ^2F_{7/2}$	20.81		2.948e−01		2.020e−02	2.030e−02	5.677e+11		A+
$5g\ ^2G_{9/2}$	$4f\ ^2F_{7/2}$	20.77	20.77 [18]	1.032e+01		7.057e−01	7.092e−01	1.595e+13		A+
$5p\ ^2P_{1/2}$	$3s\ ^2S_{1/2}$	5.60	5.59 [18]	6.612e−02	6.600e−02	1.218e−03	1.205e−03	7.045e+12		A
$5p\ ^2P_{1/2}$	$4s\ ^2S_{1/2}$	17.81		2.644e−01		1.550e−02	1.539e−02	2.781e+12		A+
$5p\ ^2P_{1/2}$	$5s\ ^2S_{1/2}$	591.30		2.097e−01		4.082e−01	4.087e−01	2.000e+09		B
$5p\ ^2P_{1/2}$	$3d\ ^2D_{3/2}$	6.51		1.712e−02	1.640e−02	3.672e−04	3.447e−04	1.346e+12		B+
$5p\ ^2P_{1/2}$	$4d\ ^2D_{3/2}$	21.69		2.164e−01		1.545e−02	1.535e−02	1.534e+12		A+
$5p\ ^2P_{3/2}$	$3s\ ^2S_{1/2}$	5.55	5.55 [18]	1.097e−01	1.096e−01	2.006e−03	1.973e−03	5.941e+12		A+
$5p\ ^2P_{3/2}$	$4s\ ^2S_{1/2}$	17.37		3.923e−01		2.243e−02	2.223e−02	2.168e+12		A+
$5p\ ^2P_{3/2}$	$5s\ ^2S_{1/2}$	321.62		7.851e−01		8.313e−01	8.324e−01	1.266e+10		B+
$5p\ ^2P_{3/2}$	$3d\ ^2D_{3/2}$	6.45		2.568e−03	2.400e−03	5.458e−05	5.084e−05	1.028e+11		B
$5p\ ^2P_{3/2}$	$4d\ ^2D_{3/2}$	21.04		3.143e−02		2.177e−03	2.161e−03	1.184e+11		A+
$5p\ ^2P_{3/2}$	$3d\ ^2D_{5/2}$	6.52		2.496e−02	2.400e−02	5.359e−04	4.993e−04	9.792e+11		B
$5p\ ^2P_{3/2}$	$4d\ ^2D_{5/2}$	21.35		3.094e−01		2.175e−02	2.157e−02	1.133e+12		A+
$5s\ ^2S_{1/2}$	$3p\ ^2P_{1/2}$	5.92	5.92 [18]	1.999e−02	1.880e−02	3.896e−04	3.779e−04	1.904e+12		B+
$5s\ ^2S_{1/2}$	$4p\ ^2P_{1/2}$	19.57		1.487e−01		9.580e−03	9.575e−03	1.296e+12		A+
$5s\ ^2S_{1/2}$	$3p\ ^2P_{3/2}$	6.17	6.17 [18]	5.155e−02	4.920e−02	1.047e−03	1.020e−03	4.513e+12		A
$5s\ ^2S_{1/2}$	$4p\ ^2P_{3/2}$	20.71	20.71 [18]	4.009e−01		2.733e−02	2.730e−02	3.117e+12		A+
$6d\ ^2D_{3/2}$	$3p\ ^2P_{1/2}$	4.98	4.98 [18]	9.938e−02		1.630e−03	1.659e−03	6.675e+12		A+
$6d\ ^2D_{3/2}$	$4p\ ^2P_{1/2}$	12.07		2.245e−01		8.923e−03	8.945e−03	2.568e+12		A+
$6d\ ^2D_{3/2}$	$5p\ ^2P_{1/2}$	33.30		7.203e−01		7.898e−02	7.901e−02	1.083e+12		A+
$6d\ ^2D_{3/2}$	$6p\ ^2P_{1/2}$	532.03		9.812e−01		1.719e+00	1.719e+00	5.780e+09		B
$6d\ ^2D_{3/2}$	$3p\ ^2P_{3/2}$	5.16		2.093e−02		3.556e−04	3.621e−04	1.310e+12		B+
$6d\ ^2D_{3/2}$	$4p\ ^2P_{3/2}$	12.50		5.118e−02		2.106e−03	2.112e−03	5.463e+11		A+
$6d\ ^2D_{3/2}$	$5p\ ^2P_{3/2}$	34.95		1.855e−01		2.134e−02	2.135e−02	2.532e+11		A+
$6d\ ^2D_{3/2}$	$4f\ ^2F_{5/2}$	13.62		1.410e−02		6.325e−04	6.432e−04	1.267e+11		A
$6d\ ^2D_{3/2}$	$5f\ ^2F_{5/2}$	39.44		2.031e−01		2.637e−02	2.645e−02	2.177e+11		A+
$6d\ ^2D_{5/2}$	$3p\ ^2P_{3/2}$	5.16	5.16 [18]	1.870e−01		3.175e−03	3.230e−03	7.822e+12		A+
$6d\ ^2D_{5/2}$	$4p\ ^2P_{3/2}$	12.47		4.473e−01		1.836e−02	1.840e−02	3.199e+12		A+
$6d\ ^2D_{5/2}$	$5p\ ^2P_{3/2}$	34.71		1.570e+00		1.794e−01	1.794e−01	1.449e+12		A+
$6d\ ^2D_{5/2}$	$6p\ ^2P_{3/2}$	786.09		1.208e+00		3.126e+00	3.128e+00	2.173e+09		C+
$6d\ ^2D_{5/2}$	$4f\ ^2F_{5/2}$	13.59		9.107e−04		4.074e−05	4.141e−05	5.485e+09		C+

Table S3 – continued from previous page

Upper level	Lower level	λ [RCI]	λ Ref.	gf [RCI]	gf Ref. [24]	S [RCI]	S [MBPT]	A [RCI]	A Ref.	Unc.
$6d\ ^2D_{5/2}$	$5f\ ^2F_{5/2}$	39.13		1.306e−02		1.683e−03	1.688e−03	9.485e+09		A+
$6d\ ^2D_{5/2}$	$4f\ ^2F_{7/2}$	13.64		1.903e−02		8.546e−04	8.673e−04	1.137e+11		A
$6d\ ^2D_{5/2}$	$5f\ ^2F_{7/2}$	39.36		2.738e−01		3.547e−02	3.557e−02	1.965e+11		A+
$6f\ ^2F_{5/2}$	$3d\ ^2D_{3/2}$	5.43	5.43 [18]	2.244e−01		4.009e−03	4.212e−03	8.477e+12		B+
$6f\ ^2F_{5/2}$	$4d\ ^2D_{3/2}$	13.00	13.01 [18]	7.239e−01		3.099e−02	3.129e−02	4.760e+12		A+
$6f\ ^2F_{5/2}$	$5d\ ^2D_{3/2}$	36.37		2.884e+00		3.454e−01	3.461e−01	2.424e+12		A+
$6f\ ^2F_{5/2}$	$3d\ ^2D_{5/2}$	5.47		1.567e−02		2.823e−04	2.955e−04	5.819e+11		B+
$6f\ ^2F_{5/2}$	$4d\ ^2D_{5/2}$	13.12		5.192e−02		2.242e−03	2.262e−03	3.354e+11		A+
$6f\ ^2F_{5/2}$	$5d\ ^2D_{5/2}$	36.84		2.146e−01		2.603e−02	2.608e−02	1.758e+11		A+
$6f\ ^2F_{5/2}$	$5g\ ^2G_{7/2}$	38.70		6.469e−02		8.243e−03	8.251e−03	4.801e+10		A+
$6f\ ^2F_{7/2}$	$3d\ ^2D_{5/2}$	5.47	5.47 [18]	3.183e−01		5.731e−03	6.005e−03	8.873e+12		B+
$6f\ ^2F_{7/2}$	$4d\ ^2D_{5/2}$	13.10	13.11 [18]	1.039e+00		4.481e−02	4.522e−02	5.045e+12		A+
$6f\ ^2F_{7/2}$	$5d\ ^2D_{5/2}$	36.72		4.222e+00		5.104e−01	5.113e−01	2.610e+12		A+
$6f\ ^2F_{7/2}$	$5g\ ^2G_{9/2}$	38.71		8.196e−02		1.045e−02	1.046e−02	4.561e+10		A+
$6g\ ^2G_{7/2}$	$4f\ ^2F_{5/2}$	13.45		1.091e+00		4.829e−02	4.883e−02	5.028e+12		A+
$6g\ ^2G_{7/2}$	$5f\ ^2F_{5/2}$	38.01		6.946e+00		8.692e−01	8.712e−01	4.008e+12		A+
$6g\ ^2G_{7/2}$	$4f\ ^2F_{7/2}$	13.50		3.992e−02		1.775e−03	1.794e−03	1.826e+11		A+
$6g\ ^2G_{7/2}$	$5f\ ^2F_{7/2}$	38.23		2.596e−01		3.267e−02	3.275e−02	1.482e+11		A+
$6g\ ^2G_{9/2}$	$4f\ ^2F_{7/2}$	13.49		1.410e+00		6.264e−02	6.333e−02	5.168e+12		A+
$6g\ ^2G_{9/2}$	$5f\ ^2F_{7/2}$	38.15		9.045e+00		1.136e+00	1.139e+00	4.145e+12		A+
$6h\ ^2H_{11/2}$	$5g\ ^2G_{9/2}$	38.43		1.637e+01		2.071e+00	2.074e+00	6.161e+12		A+
$6h\ ^2H_{9/2}$	$5g\ ^2G_{7/2}$	38.35		1.333e+01		1.683e+00	1.685e+00	6.043e+12		A+
$6h\ ^2H_{9/2}$	$5g\ ^2G_{9/2}$	38.48		3.031e−01		3.840e−02	3.845e−02	1.365e+11		A+
$6p\ ^2P_{1/2}$	$3s\ ^2S_{1/2}$	4.83	4.83 [18]	2.898e−02		4.611e−04	4.579e−04	4.137e+12		B+
$6p\ ^2P_{1/2}$	$4s\ ^2S_{1/2}$	11.86		7.365e−02		2.876e−03	2.868e−03	1.746e+12		A+
$6p\ ^2P_{1/2}$	$5s\ ^2S_{1/2}$	33.51		2.902e−01		3.202e−02	3.191e−02	8.617e+11		A+
$6p\ ^2P_{1/2}$	$6s\ ^2S_{1/2}$	1032.54		2.577e−01		8.761e−01	8.763e−01	8.062e+08		C
$6p\ ^2P_{1/2}$	$3d\ ^2D_{3/2}$	5.50		6.419e−03		1.163e−04	1.066e−04	7.065e+11		B
$6p\ ^2P_{1/2}$	$4d\ ^2D_{3/2}$	13.47		4.021e−02		1.783e−03	1.764e−03	7.394e+11		A+
$6p\ ^2P_{1/2}$	$5d\ ^2D_{3/2}$	40.26		3.538e−01		4.690e−02	4.682e−02	7.279e+11		A+
$6p\ ^2P_{3/2}$	$3s\ ^2S_{1/2}$	4.81	4.81 [18]	4.958e−02		7.859e−04	7.745e−04	3.567e+12		A
$6p\ ^2P_{3/2}$	$4s\ ^2S_{1/2}$	11.75		1.189e−01		4.600e−03	4.574e−03	1.437e+12		A+
$6p\ ^2P_{3/2}$	$5s\ ^2S_{1/2}$	32.63		4.228e−01		4.541e−02	4.521e−02	6.622e+11		A+
$6p\ ^2P_{3/2}$	$6s\ ^2S_{1/2}$	562.25		9.589e−01		1.775e+00	1.775e+00	5.058e+09		C+
$6p\ ^2P_{3/2}$	$3d\ ^2D_{3/2}$	5.48		9.758e−04		1.761e−05	1.595e−05	5.418e+10		C+
$6p\ ^2P_{3/2}$	$4d\ ^2D_{3/2}$	13.32		6.159e−03		2.702e−04	2.669e−04	5.787e+10		B+
$6p\ ^2P_{3/2}$	$5d\ ^2D_{3/2}$	38.99		5.213e−02		6.692e−03	6.680e−03	5.717e+10		A+
$6p\ ^2P_{3/2}$	$3d\ ^2D_{5/2}$	5.53		9.437e−03		1.717e−04	1.549e−04	5.151e+11		C+
$6p\ ^2P_{3/2}$	$4d\ ^2D_{5/2}$	13.44		5.980e−02		2.647e−03	2.608e−03	5.518e+11		A+

Table S3 – continued from previous page

Upper level	Lower level	λ [RCI]	λ Ref.	gf [RCI]	gf Ref. [24]	S [RCI]	S [MBPT]	A [RCI]	A Ref.	Unc.
$6p\ ^2P_{3/2}$	$5d\ ^2D_{5/2}$	39.53		5.115e−01		6.657e−02	6.639e−02	5.458e+11		A+
$6s\ ^2S_{1/2}$	$3p\ ^2P_{1/2}$	5.05		8.117e−03		1.351e−04	1.313e−04	1.060e+12		B+
$6s\ ^2S_{1/2}$	$4p\ ^2P_{1/2}$	12.50		3.254e−02		1.339e−03	1.340e−03	6.941e+11		A+
$6s\ ^2S_{1/2}$	$5p\ ^2P_{1/2}$	36.79		2.097e−01		2.540e−02	2.548e−02	5.166e+11		A+
$6s\ ^2S_{1/2}$	$3p\ ^2P_{3/2}$	5.24		2.051e−02		3.537e−04	3.440e−04	2.493e+12		B+
$6s\ ^2S_{1/2}$	$4p\ ^2P_{3/2}$	12.96		8.229e−02		3.511e−03	3.506e−03	1.634e+12		A+
$6s\ ^2S_{1/2}$	$5p\ ^2P_{3/2}$	38.82		5.583e−01		7.135e−02	7.148e−02	1.236e+12		A+
$7d\ ^2D_{3/2}$	$3p\ ^2P_{1/2}$	4.61		5.321e−02		8.083e−04	8.309e−04	4.169e+12		A
$7d\ ^2D_{3/2}$	$4p\ ^2P_{1/2}$	10.11		1.023e−01		3.407e−03	3.437e−03	1.668e+12		A+
$7d\ ^2D_{3/2}$	$5p\ ^2P_{1/2}$	21.70		2.235e−01		1.597e−02	1.604e−02	7.911e+11		A+
$7d\ ^2D_{3/2}$	$6p\ ^2P_{1/2}$	55.78		7.199e−01		1.322e−01	1.323e−01	3.859e+11		A+
$7d\ ^2D_{3/2}$	$7p\ ^2P_{1/2}$	855.54		1.171e+00		3.299e+00	3.298e+00	2.668e+09		C+
$7d\ ^2D_{3/2}$	$3p\ ^2P_{3/2}$	4.77		1.102e−02		1.729e−04	1.775e−04	8.088e+11		B+
$7d\ ^2D_{3/2}$	$4p\ ^2P_{3/2}$	10.41		2.254e−02		7.726e−04	7.785e−04	3.468e+11		A
$7d\ ^2D_{3/2}$	$5p\ ^2P_{3/2}$	22.39		5.255e−02		3.874e−03	3.888e−03	1.748e+11		A+
$7d\ ^2D_{3/2}$	$6p\ ^2P_{3/2}$	58.42		1.896e−01		3.646e−02	3.646e−02	9.264e+10		A+
$7d\ ^2D_{3/2}$	$4f\ ^2F_{5/2}$	11.18		5.018e−03		1.847e−04	1.953e−04	6.696e+10		B+
$7d\ ^2D_{3/2}$	$5f\ ^2F_{5/2}$	24.15		3.710e−02		2.950e−03	3.013e−03	1.060e+11		A
$7d\ ^2D_{3/2}$	$6f\ ^2F_{5/2}$	65.48		3.495e−01		7.534e−02	7.552e−02	1.359e+11		A+
$7d\ ^2D_{5/2}$	$3p\ ^2P_{3/2}$	4.76		9.893e−02		1.552e−03	1.591e−03	4.847e+12		A
$7d\ ^2D_{5/2}$	$4p\ ^2P_{3/2}$	10.40		1.988e−01		6.804e−03	6.849e−03	2.044e+12		A+
$7d\ ^2D_{5/2}$	$5p\ ^2P_{3/2}$	22.33		4.553e−01		3.347e−02	3.358e−02	1.015e+12		A+
$7d\ ^2D_{5/2}$	$6p\ ^2P_{3/2}$	57.98		1.595e+00		3.045e−01	3.045e−01	5.275e+11		A+
$7d\ ^2D_{5/2}$	$7p\ ^2P_{3/2}$	1264.22		1.441e+00		6.000e+00	5.999e+00	1.003e+09		D+
$7d\ ^2D_{5/2}$	$4f\ ^2F_{5/2}$	11.16		3.246e−04		1.193e−05	1.263e−05	2.896e+09		C+
$7d\ ^2D_{5/2}$	$5f\ ^2F_{5/2}$	24.08		2.414e−03		1.913e−04	1.956e−04	4.628e+09		B+
$7d\ ^2D_{5/2}$	$6f\ ^2F_{5/2}$	64.94		2.259e−02		4.830e−03	4.843e−03	5.956e+09		A+
$7d\ ^2D_{5/2}$	$4f\ ^2F_{7/2}$	11.20		6.767e−03		2.495e−04	2.628e−04	5.998e+10		B+
$7d\ ^2D_{5/2}$	$5f\ ^2F_{7/2}$	24.17		5.028e−02		4.000e−03	4.082e−03	9.572e+10		A
$7d\ ^2D_{5/2}$	$6f\ ^2F_{7/2}$	65.30		4.722e−01		1.015e−01	1.018e−01	1.231e+11		A+
$7f\ ^2F_{5/2}$	$3d\ ^2D_{3/2}$	5.00		1.078e−01		1.773e−03	1.884e−03	4.795e+12		B+
$7f\ ^2F_{5/2}$	$4d\ ^2D_{3/2}$	10.79		2.910e−01		1.034e−02	1.050e−02	2.778e+12		A+
$7f\ ^2F_{5/2}$	$5d\ ^2D_{3/2}$	23.12		7.393e−01		5.628e−02	5.664e−02	1.537e+12		A+
$7f\ ^2F_{5/2}$	$6d\ ^2D_{3/2}$	60.48		2.778e+00		5.531e−01	5.537e−01	8.443e+11		A+
$7f\ ^2F_{5/2}$	$3d\ ^2D_{5/2}$	5.04		7.488e−03		1.242e−04	1.313e−04	3.281e+11		B+
$7f\ ^2F_{5/2}$	$4d\ ^2D_{5/2}$	10.87		2.066e−02		7.393e−04	7.501e−04	1.943e+11		A
$7f\ ^2F_{5/2}$	$5d\ ^2D_{5/2}$	23.31		5.365e−02		4.117e−03	4.141e−03	1.098e+11		A+
$7f\ ^2F_{5/2}$	$6d\ ^2D_{5/2}$	61.23		2.083e−01		4.199e−02	4.203e−02	6.177e+10		A+
$7f\ ^2F_{5/2}$	$5g\ ^2G_{7/2}$	24.04		1.028e−02		8.136e−04	8.299e−04	1.977e+10		A

Table S3 – continued from previous page

Upper level	Lower level	λ [RCI]	λ Ref.	gf [RCI]	gf Ref. [24]	S [RCI]	S [MBPT]	A [RCI]	A Ref.	Unc.
$7f\ ^2F_{5/2}$	$6g\ ^2G_{7/2}$	64.19		1.723e−01		3.641e−02	3.637e−02	4.648e+10		A+
$7f\ ^2F_{7/2}$	$3d\ ^2D_{5/2}$	5.04		1.525e−01		2.528e−03	2.675e−03	5.013e+12		B+
$7f\ ^2F_{7/2}$	$4d\ ^2D_{5/2}$	10.86		4.153e−01		1.486e−02	1.507e−02	2.934e+12		A+
$7f\ ^2F_{7/2}$	$5d\ ^2D_{5/2}$	23.28		1.067e+00		8.178e−02	8.225e−02	1.642e+12		A+
$7f\ ^2F_{7/2}$	$6d\ ^2D_{5/2}$	61.03		4.083e+00		8.203e−01	8.209e−01	9.140e+11		A+
$7f\ ^2F_{7/2}$	$6g\ ^2G_{7/2}$	63.97		6.042e−03		1.273e−03	1.271e−03	1.231e+09		A
$7f\ ^2F_{7/2}$	$5g\ ^2G_{9/2}$	24.06		1.304e−02		1.033e−03	1.053e−03	1.878e+10		A
$7f\ ^2F_{7/2}$	$6g\ ^2G_{9/2}$	64.18		2.186e−01		4.619e−02	4.615e−02	4.425e+10		A+
$7g\ ^2G_{7/2}$	$4f\ ^2F_{5/2}$	11.10		3.501e−01		1.280e−02	1.303e−02	2.367e+12		A+
$7g\ ^2G_{7/2}$	$5f\ ^2F_{5/2}$	23.81		1.367e+00		1.071e−01	1.077e−01	2.011e+12		A+
$7g\ ^2G_{7/2}$	$6f\ ^2F_{5/2}$	63.00		6.455e+00		1.339e+00	1.341e+00	1.356e+12		A+
$7g\ ^2G_{7/2}$	$4f\ ^2F_{7/2}$	11.14		1.274e−02		4.672e−04	4.754e−04	8.557e+10		B+
$7g\ ^2G_{7/2}$	$5f\ ^2F_{7/2}$	23.89		5.044e−02		3.967e−03	3.989e−03	7.367e+10		A+
$7g\ ^2G_{7/2}$	$6f\ ^2F_{7/2}$	63.34		2.424e−01		5.054e−02	5.061e−02	5.036e+10		A+
$7g\ ^2G_{7/2}$	$6h\ ^2H_{9/2}$	63.95		6.436e−02		1.355e−02	1.351e−02	1.312e+10		A+
$7g\ ^2G_{9/2}$	$4f\ ^2F_{7/2}$	11.14		4.518e−01		1.656e−02	1.686e−02	2.430e+12		A+
$7g\ ^2G_{9/2}$	$5f\ ^2F_{7/2}$	23.87		1.771e+00		1.392e−01	1.400e−01	2.073e+12		A+
$7g\ ^2G_{9/2}$	$6f\ ^2F_{7/2}$	63.21		8.418e+00		1.752e+00	1.754e+00	1.405e+12		A+
$7g\ ^2G_{9/2}$	$6h\ ^2H_{11/2}$	63.96		7.805e−02		1.644e−02	1.639e−02	1.273e+10		A+
$7h\ ^2H_{11/2}$	$5g\ ^2G_{9/2}$	23.99		1.971e+00		1.557e−01	1.563e−01	1.904e+12		A+
$7h\ ^2H_{11/2}$	$6g\ ^2G_{9/2}$	63.69		1.457e+01		3.054e+00	3.055e+00	1.996e+12		A+
$7h\ ^2H_{9/2}$	$5g\ ^2G_{7/2}$	23.95		1.609e+00		1.269e−01	1.274e−01	1.870e+12		A+
$7h\ ^2H_{9/2}$	$6g\ ^2G_{7/2}$	63.57		1.185e+01		2.479e+00	2.480e+00	1.955e+12		A+
$7h\ ^2H_{9/2}$	$5g\ ^2G_{9/2}$	24.00		3.625e−02		2.865e−03	2.876e−03	4.197e+10		A+
$7h\ ^2H_{9/2}$	$6g\ ^2G_{9/2}$	63.77		2.704e−01		5.677e−02	5.679e−02	4.434e+10		A+
$7i\ ^2I_{11/2}$	$6h\ ^2H_{9/2}$	63.71		2.001e+01		4.196e+00	4.198e+00	2.740e+12		A+
$7i\ ^2I_{11/2}$	$6h\ ^2H_{11/2}$	63.85		3.078e−01		6.471e−02	6.473e−02	4.197e+10		A+
$7i\ ^2I_{13/2}$	$6h\ ^2H_{11/2}$	63.79		2.371e+01		4.980e+00	4.981e+00	2.777e+12		A+
$7p\ ^2P_{1/2}$	$3s\ ^2S_{1/2}$	4.47		1.568e−02		2.308e−04	2.302e−04	2.616e+12		B+
$7p\ ^2P_{1/2}$	$4s\ ^2S_{1/2}$	9.89		3.291e−02		1.072e−03	1.075e−03	1.121e+12		A
$7p\ ^2P_{1/2}$	$5s\ ^2S_{1/2}$	21.46		8.137e−02		5.749e−03	5.761e−03	5.893e+11		A+
$7p\ ^2P_{1/2}$	$6s\ ^2S_{1/2}$	56.41		3.181e−01		5.908e−02	5.892e−02	3.335e+11		A+
$7p\ ^2P_{1/2}$	$3d\ ^2D_{3/2}$	5.04		3.207e−03		5.321e−05	4.774e−05	4.211e+11		C+
$7p\ ^2P_{1/2}$	$4d\ ^2D_{3/2}$	10.99		1.523e−02		5.508e−04	5.455e−04	4.207e+11		B+
$7p\ ^2P_{1/2}$	$5d\ ^2D_{3/2}$	24.04		6.698e−02		5.302e−03	5.311e−03	3.865e+11		A+
$7p\ ^2P_{1/2}$	$6d\ ^2D_{3/2}$	67.20		5.005e−01		1.107e−01	1.106e−01	3.696e+11		A+
$7p\ ^2P_{3/2}$	$3s\ ^2S_{1/2}$	4.46		2.723e−02		4.002e−04	3.958e−04	2.283e+12		B+
$7p\ ^2P_{3/2}$	$4s\ ^2S_{1/2}$	9.85		5.481e−02		1.777e−03	1.776e−03	9.430e+11		A+
$7p\ ^2P_{3/2}$	$5s\ ^2S_{1/2}$	21.23		1.291e−01		9.022e−03	9.030e−03	4.776e+11		A+

Table S3 – continued from previous page

Upper level	Lower level	λ [RCI]	λ Ref.	gf [RCI]	gf Ref. [24]	S [RCI]	S [MBPT]	A [RCI]	A Ref.	Unc.
$7p\ ^2P_{3/2}$	$6s\ ^2S_{1/2}$	54.84		4.576e−01		8.263e−02	8.234e−02	2.537e+11		A+
$7p\ ^2P_{3/2}$	$7s\ ^2S_{1/2}$	901.10		1.130e+00		3.352e+00	3.350e+00	2.320e+09		C+
$7p\ ^2P_{3/2}$	$3d\ ^2D_{3/2}$	5.03		4.904e−04		8.116e−06	7.166e−06	3.236e+10		C
$7p\ ^2P_{3/2}$	$4d\ ^2D_{3/2}$	10.93		2.365e−03		8.507e−05	8.410e−05	3.303e+10		B
$7p\ ^2P_{3/2}$	$5d\ ^2D_{3/2}$	23.75		1.044e−02		8.161e−04	8.174e−04	3.085e+10		A
$7p\ ^2P_{3/2}$	$6d\ ^2D_{3/2}$	64.99		7.451e−02		1.594e−02	1.592e−02	2.942e+10		A+
$7p\ ^2P_{3/2}$	$3d\ ^2D_{5/2}$	5.07		4.729e−03		7.889e−05	6.872e−05	3.072e+11		C+
$7p\ ^2P_{3/2}$	$4d\ ^2D_{5/2}$	11.01		2.286e−02		8.285e−04	8.133e−04	3.146e+11		A
$7p\ ^2P_{3/2}$	$5d\ ^2D_{5/2}$	23.95		1.009e−01		7.957e−03	7.948e−03	2.934e+11		A+
$7p\ ^2P_{3/2}$	$6d\ ^2D_{5/2}$	65.86		7.290e−01		1.581e−01	1.577e−01	2.802e+11		A+
$7s\ ^2S_{1/2}$	$3p\ ^2P_{1/2}$	4.65		4.233e−03		6.482e−05	6.381e−05	6.524e+11		B
$7s\ ^2S_{1/2}$	$4p\ ^2P_{1/2}$	10.30		1.322e−02		4.482e−04	4.534e−04	4.157e+11		B+
$7s\ ^2S_{1/2}$	$5p\ ^2P_{1/2}$	22.57		4.587e−02		3.409e−03	3.441e−03	3.003e+11		A+
$7s\ ^2S_{1/2}$	$6p\ ^2P_{1/2}$	61.90		2.721e−01		5.546e−02	5.564e−02	2.369e+11		A+
$7s\ ^2S_{1/2}$	$3p\ ^2P_{3/2}$	4.81		1.058e−02		1.675e−04	1.639e−04	1.527e+12		B+
$7s\ ^2S_{1/2}$	$4p\ ^2P_{3/2}$	10.61		3.278e−02		1.145e−03	1.150e−03	9.716e+11		A
$7s\ ^2S_{1/2}$	$5p\ ^2P_{3/2}$	23.32		1.145e−01		8.787e−03	8.840e−03	7.021e+11		A+
$7s\ ^2S_{1/2}$	$6p\ ^2P_{3/2}$	65.16		7.186e−01		1.542e−01	1.545e−01	5.644e+11		A+
$8d\ ^2D_{3/2}$	$3p\ ^2P_{1/2}$	4.40		3.224e−02		4.673e−04	4.872e−04	2.773e+12		B
$8d\ ^2D_{3/2}$	$4p\ ^2P_{1/2}$	9.15		5.680e−02		1.711e−03	1.748e−03	1.131e+12		B+
$8d\ ^2D_{3/2}$	$5p\ ^2P_{1/2}$	17.71		1.043e−01		6.082e−03	6.166e−03	5.546e+11		B+
$8d\ ^2D_{3/2}$	$6p\ ^2P_{1/2}$	35.32		2.260e−01		2.628e−02	2.652e−02	3.021e+11		B+
$8d\ ^2D_{3/2}$	$7p\ ^2P_{1/2}$	86.54		7.328e−01		2.088e−01	2.088e−01	1.632e+11		B+
$8d\ ^2D_{3/2}$	$8p\ ^2P_{1/2}$	1288.32		1.357e+00		5.756e+00	5.750e+00	1.363e+09		D+
$8d\ ^2D_{3/2}$	$3p\ ^2P_{3/2}$	4.54		6.607e−03		9.879e−05	1.025e−04	5.341e+11		C+
$8d\ ^2D_{3/2}$	$4p\ ^2P_{3/2}$	9.40		1.228e−02		3.798e−04	3.863e−04	2.320e+11		B
$8d\ ^2D_{3/2}$	$5p\ ^2P_{3/2}$	18.17		2.367e−02		1.416e−03	1.430e−03	1.196e+11		B+
$8d\ ^2D_{3/2}$	$6p\ ^2P_{3/2}$	36.36		5.431e−02		6.501e−03	6.547e−03	6.852e+10		B+
$8d\ ^2D_{3/2}$	$7p\ ^2P_{3/2}$	90.50		1.962e−01		5.846e−02	5.840e−02	3.995e+10		B+
$8d\ ^2D_{3/2}$	$4f\ ^2F_{5/2}$	10.02		2.415e−03		7.964e−05	9.127e−05	4.014e+10		C+
$8d\ ^2D_{3/2}$	$5f\ ^2F_{5/2}$	19.31		1.354e−02		8.608e−04	9.149e−04	6.056e+10		B+
$8d\ ^2D_{3/2}$	$6f\ ^2F_{5/2}$	38.97		6.620e−02		8.494e−03	8.720e−03	7.267e+10		B+
$8d\ ^2D_{3/2}$	$7f\ ^2F_{5/2}$	101.00		5.126e−01		1.704e−01	1.707e−01	8.380e+10		B+
$8d\ ^2D_{5/2}$	$3p\ ^2P_{3/2}$	4.54		5.948e−02		8.890e−04	9.209e−04	3.208e+12		B+
$8d\ ^2D_{5/2}$	$4p\ ^2P_{3/2}$	9.39		1.088e−01		3.363e−03	3.414e−03	1.372e+12		B+
$8d\ ^2D_{5/2}$	$5p\ ^2P_{3/2}$	18.14		2.069e−01		1.236e−02	1.247e−02	6.992e+11		B+
$8d\ ^2D_{5/2}$	$6p\ ^2P_{3/2}$	36.24		4.678e−01		5.582e−02	5.618e−02	3.959e+11		B+
$8d\ ^2D_{5/2}$	$7p\ ^2P_{3/2}$	89.80		1.644e+00		4.860e−01	4.854e−01	2.266e+11		B+
$8d\ ^2D_{5/2}$	$4f\ ^2F_{5/2}$	10.01		1.562e−04		5.148e−06	5.924e−06	1.734e+09		C

Table S3 – continued from previous page

Upper level	Lower level	λ [RCI]	λ Ref.	gf [RCI]	gf Ref. [24]	S [RCI]	S [MBPT]	A [RCI]	A Ref.	Unc.
$8d\ ^2D_{5/2}$	$5f\ ^2F_{5/2}$	19.28		8.827e−04		5.602e−05	5.969e−05	2.641e+09		C+
$8d\ ^2D_{5/2}$	$6f\ ^2F_{5/2}$	38.84		4.332e−03		5.540e−04	5.693e−04	3.192e+09		B
$8d\ ^2D_{5/2}$	$7f\ ^2F_{5/2}$	100.13		3.326e−02		1.096e−02	1.098e−02	3.688e+09		B+
$8d\ ^2D_{5/2}$	$4f\ ^2F_{7/2}$	10.04		3.243e−03		1.072e−04	1.222e−04	3.579e+10		C+
$8d\ ^2D_{5/2}$	$5f\ ^2F_{7/2}$	19.33		1.832e−02		1.166e−03	1.238e−03	5.448e+10		B+
$8d\ ^2D_{5/2}$	$6f\ ^2F_{7/2}$	38.97		8.990e−02		1.154e−02	1.184e−02	6.580e+10		B+
$8d\ ^2D_{5/2}$	$7f\ ^2F_{7/2}$	100.68		6.936e−01		2.299e−01	2.303e−01	7.608e+10		B+
$8f\ ^2F_{5/2}$	$3d\ ^2D_{3/2}$	4.76		6.103e−02		9.554e−04	1.025e−03	3.001e+12		B
$8f\ ^2F_{5/2}$	$4d\ ^2D_{3/2}$	9.72		1.500e−01		4.801e−03	4.912e−03	1.766e+12		B+
$8f\ ^2F_{5/2}$	$5d\ ^2D_{3/2}$	18.70		3.150e−01		1.939e−02	1.963e−02	1.001e+12		B+
$8f\ ^2F_{5/2}$	$6d\ ^2D_{3/2}$	37.37		7.462e−01		9.181e−02	9.252e−02	5.940e+11		B+
$8f\ ^2F_{5/2}$	$7d\ ^2D_{3/2}$	93.37		2.749e+00		8.451e−01	8.453e−01	3.506e+11		B
$8f\ ^2F_{5/2}$	$3d\ ^2D_{5/2}$	4.79		4.229e−03		6.671e−05	7.105e−05	2.049e+11		C+
$8f\ ^2F_{5/2}$	$4d\ ^2D_{5/2}$	9.78		1.059e−02		3.411e−04	3.485e−04	1.230e+11		B
$8f\ ^2F_{5/2}$	$5d\ ^2D_{5/2}$	18.82		2.262e−02		1.402e−03	1.417e−03	7.098e+10		B+
$8f\ ^2F_{5/2}$	$6d\ ^2D_{5/2}$	37.66		5.459e−02		6.767e−03	6.815e−03	4.280e+10		B+
$8f\ ^2F_{5/2}$	$7d\ ^2D_{5/2}$	94.50		2.073e−01		6.450e−02	6.449e−02	2.581e+10		B+
$8f\ ^2F_{5/2}$	$5g\ ^2G_{7/2}$	19.30		3.415e−03		2.170e−04	2.301e−04	1.020e+10		B
$8f\ ^2F_{5/2}$	$6g\ ^2G_{7/2}$	38.76		2.970e−02		3.790e−03	3.874e−03	2.199e+10		B+
$8f\ ^2F_{5/2}$	$7g\ ^2G_{7/2}$	98.92		3.100e−01		1.010e−01	1.007e−01	3.522e+10		B+
$8f\ ^2F_{7/2}$	$3d\ ^2D_{5/2}$	4.79		8.622e−02		1.360e−03	1.450e−03	3.133e+12		B+
$8f\ ^2F_{7/2}$	$4d\ ^2D_{5/2}$	9.78		2.134e−01		6.872e−03	7.020e−03	1.861e+12		B+
$8f\ ^2F_{7/2}$	$5d\ ^2D_{5/2}$	18.81		4.519e−01		2.799e−02	2.829e−02	1.065e+12		B+
$8f\ ^2F_{7/2}$	$6d\ ^2D_{5/2}$	37.60		1.081e+00		1.339e−01	1.348e−01	6.376e+11		B+
$8f\ ^2F_{7/2}$	$7d\ ^2D_{5/2}$	94.17		4.053e+00		1.257e+00	1.256e+00	3.810e+11		B
$8f\ ^2F_{7/2}$	$7g\ ^2G_{7/2}$	98.57		1.091e−02		3.539e−03	3.529e−03	9.358e+08		B+
$8f\ ^2F_{7/2}$	$5g\ ^2G_{9/2}$	19.32		4.328e−03		2.753e−04	2.917e−04	9.672e+09		B
$8f\ ^2F_{7/2}$	$6g\ ^2G_{9/2}$	38.78		3.774e−02		4.818e−03	4.924e−03	2.092e+10		B+
$8f\ ^2F_{7/2}$	$7g\ ^2G_{9/2}$	98.88		3.938e−01		1.282e−01	1.279e−01	3.358e+10		B+
$8g\ ^2G_{7/2}$	$4f\ ^2F_{5/2}$	9.98		1.592e−01		5.230e−03	5.369e−03	1.334e+12		B+
$8g\ ^2G_{7/2}$	$5f\ ^2F_{5/2}$	19.16		5.084e−01		3.207e−02	3.240e−02	1.155e+12		B+
$8g\ ^2G_{7/2}$	$6f\ ^2F_{5/2}$	38.37		1.458e+00		1.842e−01	1.853e−01	8.258e+11		B+
$8g\ ^2G_{7/2}$	$7f\ ^2F_{5/2}$	97.05		6.216e+00		1.986e+00	1.987e+00	5.502e+11		B
$8g\ ^2G_{7/2}$	$4f\ ^2F_{7/2}$	10.00		5.773e−03		1.901e−04	1.951e−04	4.809e+10		B
$8g\ ^2G_{7/2}$	$5f\ ^2F_{7/2}$	19.21		1.865e−02		1.180e−03	1.192e−03	4.212e+10		B+
$8g\ ^2G_{7/2}$	$6f\ ^2F_{7/2}$	38.50		5.408e−02		6.855e−03	6.895e−03	3.042e+10		B+
$8g\ ^2G_{7/2}$	$7f\ ^2F_{7/2}$	97.57		2.341e−01		7.518e−02	7.522e−02	2.050e+10		B+
$8g\ ^2G_{7/2}$	$6h\ ^2H_{9/2}$	38.72		9.210e−03		1.174e−03	1.184e−03	5.121e+09		B+
$8g\ ^2G_{7/2}$	$7h\ ^2H_{9/2}$	98.51		1.750e−01		5.677e−02	5.641e−02	1.504e+10		B+

Table S3 – continued from previous page

Upper level	Lower level	λ [RCI]	λ Ref.	gf [RCI]	gf Ref. [24]	S [RCI]	S [MBPT]	A [RCI]	A Ref.	Unc.
$8g\ ^2G_{9/2}$	$4f\ ^2F_{7/2}$	10.00		2.052e−01		6.759e−03	6.936e−03	1.368e+12		B+
$8g\ ^2G_{9/2}$	$5f\ ^2F_{7/2}$	19.21		6.574e−01		4.157e−02	4.200e−02	1.189e+12		B+
$8g\ ^2G_{9/2}$	$6f\ ^2F_{7/2}$	38.47		1.893e+00		2.397e−01	2.411e−01	8.532e+11		B+
$8g\ ^2G_{9/2}$	$7f\ ^2F_{7/2}$	97.36		8.115e+00		2.601e+00	2.602e+00	5.710e+11		B
$8g\ ^2G_{9/2}$	$6h\ ^2H_{11/2}$	38.74		1.117e−02		1.425e−03	1.437e−03	4.965e+09		B+
$8g\ ^2G_{9/2}$	$7h\ ^2H_{11/2}$	98.51		2.124e−01		6.890e−02	6.846e−02	1.460e+10		B+
$8h\ ^2H_{11/2}$	$5g\ ^2G_{9/2}$	19.29		5.845e−01		3.712e−02	3.734e−02	8.735e+11		B+
$8h\ ^2H_{11/2}$	$6g\ ^2G_{9/2}$	38.65		2.602e+00		3.311e−01	3.320e−01	9.678e+11		B+
$8h\ ^2H_{11/2}$	$7g\ ^2G_{9/2}$	98.09		1.357e+01		4.384e+00	4.380e+00	7.843e+11		B
$8h\ ^2H_{11/2}$	$7i\ ^2I_{13/2}$	98.49		7.836e−02		2.541e−02	2.524e−02	4.490e+09		B+
$8h\ ^2H_{9/2}$	$5g\ ^2G_{7/2}$	19.26		4.776e−01		3.028e−02	3.046e−02	8.588e+11		B+
$8h\ ^2H_{9/2}$	$6g\ ^2G_{7/2}$	38.60		2.121e+00		2.695e−01	2.703e−01	9.496e+11		B+
$8h\ ^2H_{9/2}$	$7g\ ^2G_{7/2}$	97.92		1.103e+01		3.557e+00	3.554e+00	7.675e+11		B
$8h\ ^2H_{9/2}$	$5g\ ^2G_{9/2}$	19.29		1.071e−02		6.806e−04	6.846e−04	1.920e+10		B+
$8h\ ^2H_{9/2}$	$6g\ ^2G_{9/2}$	38.68		4.801e−02		6.113e−03	6.130e−03	2.141e+10		B+
$8h\ ^2H_{9/2}$	$7g\ ^2G_{9/2}$	98.23		2.524e−01		8.163e−02	8.158e−02	1.745e+10		B+
$8h\ ^2H_{9/2}$	$7i\ ^2I_{11/2}$	98.48		6.662e−02		2.160e−02	2.145e−02	4.581e+09		B+
$8i\ ^2I_{11/2}$	$6h\ ^2H_{9/2}$	38.66		2.165e+00		2.756e−01	2.762e−01	8.050e+11		B+
$8i\ ^2I_{11/2}$	$7h\ ^2H_{9/2}$	98.13		1.798e+01		5.808e+00	5.804e+00	1.038e+12		C+
$8i\ ^2I_{11/2}$	$6h\ ^2H_{11/2}$	38.71		3.309e−02		4.218e−03	4.227e−03	1.227e+10		B+
$8i\ ^2I_{11/2}$	$7h\ ^2H_{11/2}$	98.33		2.772e−01		8.975e−02	8.970e−02	1.594e+10		B+
$8i\ ^2I_{13/2}$	$6h\ ^2H_{11/2}$	38.70		2.562e+00		3.264e−01	3.271e−01	8.151e+11		B+
$8i\ ^2I_{13/2}$	$7h\ ^2H_{11/2}$	98.24		2.132e+01		6.895e+00	6.890e+00	1.052e+12		C+
$8p\ ^2P_{1/2}$	$3s\ ^2S_{1/2}$	4.27		9.587e−03		1.346e−04	1.351e−04	1.757e+12		B
$8p\ ^2P_{1/2}$	$4s\ ^2S_{1/2}$	8.94		1.814e−02		5.341e−04	5.403e−04	7.570e+11		B
$8p\ ^2P_{1/2}$	$5s\ ^2S_{1/2}$	17.43		3.670e−02		2.106e−03	2.127e−03	4.030e+11		B+
$8p\ ^2P_{1/2}$	$6s\ ^2S_{1/2}$	35.08		8.925e−02		1.031e−02	1.038e−02	2.419e+11		B+
$8p\ ^2P_{1/2}$	$7s\ ^2S_{1/2}$	87.85		3.473e−01		1.004e−01	1.001e−01	1.501e+11		B+
$8p\ ^2P_{1/2}$	$3d\ ^2D_{3/2}$	4.78		1.869e−03		2.942e−05	2.585e−05	2.729e+11		C+
$8p\ ^2P_{1/2}$	$4d\ ^2D_{3/2}$	9.82		7.664e−03		2.479e−04	2.471e−04	2.649e+11		B
$8p\ ^2P_{1/2}$	$5d\ ^2D_{3/2}$	19.09		2.563e−02		1.611e−03	1.625e−03	2.345e+11		B+
$8p\ ^2P_{1/2}$	$6d\ ^2D_{3/2}$	38.97		9.597e−02		1.231e−02	1.241e−02	2.107e+11		B+
$8p\ ^2P_{1/2}$	$7d\ ^2D_{3/2}$	104.05		6.531e−01		2.237e−01	2.233e−01	2.012e+11		B+
$8p\ ^2P_{3/2}$	$3s\ ^2S_{1/2}$	4.26		1.682e−02		2.358e−04	2.344e−04	1.545e+12		B
$8p\ ^2P_{3/2}$	$4s\ ^2S_{1/2}$	8.91		3.071e−02		9.013e−04	9.089e−04	6.445e+11		B+
$8p\ ^2P_{3/2}$	$5s\ ^2S_{1/2}$	17.33		6.010e−02		3.428e−03	3.459e−03	3.338e+11		B+
$8p\ ^2P_{3/2}$	$6s\ ^2S_{1/2}$	34.67		1.398e−01		1.596e−02	1.606e−02	1.940e+11		B+
$8p\ ^2P_{3/2}$	$7s\ ^2S_{1/2}$	85.32		4.949e−01		1.390e−01	1.384e−01	1.134e+11		B+
$8p\ ^2P_{3/2}$	$8s\ ^2S_{1/2}$	1355.11		1.299e+00		5.794e+00	5.788e+00	1.179e+09		D+

Table S3 – continued from previous page

Upper level	Lower level	λ [RCI]	λ Ref.	gf [RCI]	gf Ref. [24]	S [RCI]	S [MBPT]	A [RCI]	A Ref.	Unc.
$8p\ ^2P_{3/2}$	$3d\ ^2D_{3/2}$	4.77		2.868e−04		4.506e−06	3.870e−06	2.100e+10		C
$8p\ ^2P_{3/2}$	$4d\ ^2D_{3/2}$	9.79		1.197e−03		3.858e−05	3.841e−05	2.082e+10		C+
$8p\ ^2P_{3/2}$	$5d\ ^2D_{3/2}$	18.97		4.052e−03		2.531e−04	2.554e−04	1.878e+10		B
$8p\ ^2P_{3/2}$	$6d\ ^2D_{3/2}$	38.47		1.514e−02		1.918e−03	1.933e−03	1.706e+10		B+
$8p\ ^2P_{3/2}$	$7d\ ^2D_{3/2}$	100.53		9.800e−02		3.244e−02	3.236e−02	1.617e+10		B+
$8p\ ^2P_{3/2}$	$3d\ ^2D_{5/2}$	4.81		2.761e−03		4.370e−05	3.646e−05	1.991e+11		C
$8p\ ^2P_{3/2}$	$4d\ ^2D_{5/2}$	9.86		1.154e−02		3.746e−04	3.682e−04	1.981e+11		B
$8p\ ^2P_{3/2}$	$5d\ ^2D_{5/2}$	19.10		3.902e−02		2.453e−03	2.458e−03	1.784e+11		B+
$8p\ ^2P_{3/2}$	$6d\ ^2D_{5/2}$	38.77		1.458e−01		1.862e−02	1.871e−02	1.618e+11		B+
$8p\ ^2P_{3/2}$	$7d\ ^2D_{5/2}$	101.84		9.563e−01		3.206e−01	3.196e−01	1.538e+11		B+
$8s\ ^2S_{1/2}$	$3p\ ^2P_{1/2}$	4.43		2.533e−03		3.691e−05	3.727e−05	4.314e+11		C+
$8s\ ^2S_{1/2}$	$4p\ ^2P_{1/2}$	9.25		6.930e−03		2.111e−04	2.188e−04	2.700e+11		B
$8s\ ^2S_{1/2}$	$5p\ ^2P_{1/2}$	18.09		1.871e−02		1.114e−03	1.143e−03	1.907e+11		B+
$8s\ ^2S_{1/2}$	$6p\ ^2P_{1/2}$	36.85		5.961e−02		7.232e−03	7.344e−03	1.464e+11		B+
$8s\ ^2S_{1/2}$	$7p\ ^2P_{1/2}$	96.36		3.354e−01		1.064e−01	1.067e−01	1.205e+11		B+
$8s\ ^2S_{1/2}$	$3p\ ^2P_{3/2}$	4.57		6.290e−03		9.455e−05	9.377e−05	1.006e+12		C+
$8s\ ^2S_{1/2}$	$4p\ ^2P_{3/2}$	9.50		1.700e−02		5.318e−04	5.429e−04	6.283e+11		B
$8s\ ^2S_{1/2}$	$5p\ ^2P_{3/2}$	18.56		4.572e−02		2.794e−03	2.841e−03	4.424e+11		B+
$8s\ ^2S_{1/2}$	$6p\ ^2P_{3/2}$	37.98		1.473e−01		1.842e−02	1.862e−02	3.405e+11		B+
$8s\ ^2S_{1/2}$	$7p\ ^2P_{3/2}$	101.29		8.805e−01		2.936e−01	2.940e−01	2.862e+11		B+
$9d\ ^2D_{3/2}$	$3p\ ^2P_{1/2}$	4.27		2.117e−02		2.975e−04	3.140e−04	1.937e+12		B
$9d\ ^2D_{3/2}$	$4p\ ^2P_{1/2}$	8.59		3.548e−02		1.004e−03	1.056e−03	8.011e+11		B+
$9d\ ^2D_{3/2}$	$5p\ ^2P_{1/2}$	15.73		5.923e−02		3.068e−03	3.193e−03	3.991e+11		B+
$9d\ ^2D_{3/2}$	$6p\ ^2P_{1/2}$	28.23		1.071e−01		9.954e−03	1.026e−02	2.240e+11		B+
$9d\ ^2D_{3/2}$	$7p\ ^2P_{1/2}$	53.59		2.315e−01		4.084e−02	4.172e−02	1.344e+11		B+
$9d\ ^2D_{3/2}$	$8p\ ^2P_{1/2}$	126.89		7.546e−01		3.152e−01	3.159e−01	7.815e+10		B+
$9d\ ^2D_{3/2}$	$9p\ ^2P_{1/2}$	1846.22		1.539e+00		9.355e+00	9.323e+00	7.530e+08		D+
$9d\ ^2D_{3/2}$	$3p\ ^2P_{3/2}$	4.40		4.310e−03		6.243e−05	6.532e−05	3.713e+11		C+
$9d\ ^2D_{3/2}$	$4p\ ^2P_{3/2}$	8.81		7.571e−03		2.195e−04	2.278e−04	1.628e+11		B
$9d\ ^2D_{3/2}$	$5p\ ^2P_{3/2}$	16.09		1.316e−02		6.969e−04	7.172e−04	8.474e+10		B+
$9d\ ^2D_{3/2}$	$6p\ ^2P_{3/2}$	28.89		2.478e−02		2.357e−03	2.409e−03	4.950e+10		B+
$9d\ ^2D_{3/2}$	$7p\ ^2P_{3/2}$	55.08		5.648e−02		1.024e−02	1.040e−02	3.104e+10		B+
$9d\ ^2D_{3/2}$	$8p\ ^2P_{3/2}$	132.55		2.045e−01		8.924e−02	8.920e−02	1.941e+10		B+
$9d\ ^2D_{3/2}$	$4f\ ^2F_{5/2}$	9.35		1.367e−03		4.209e−05	5.748e−05	2.608e+10		D+
$9d\ ^2D_{3/2}$	$5f\ ^2F_{5/2}$	16.98		6.603e−03		3.691e−04	4.360e−04	3.819e+10		C
$9d\ ^2D_{3/2}$	$6f\ ^2F_{5/2}$	30.52		2.457e−02		2.469e−03	2.698e−03	4.399e+10		B
$9d\ ^2D_{3/2}$	$7f\ ^2F_{5/2}$	58.80		9.951e−02		1.926e−02	2.015e−02	4.799e+10		B+
$9d\ ^2D_{3/2}$	$8f\ ^2F_{5/2}$	147.46		6.874e−01		3.337e−01	3.353e−01	5.272e+10		B
$9d\ ^2D_{5/2}$	$3p\ ^2P_{3/2}$	4.40		3.890e−02		5.633e−04	5.876e−04	2.235e+12		B

Table S3 – continued from previous page

Upper level	Lower level	λ [RCI]	λ Ref.	gf [RCI]	gf Ref. [24]	S [RCI]	S [MBPT]	A [RCI]	A Ref.	Unc.
$9d\ ^2D_{5/2}$	$4p\ ^2P_{3/2}$	8.80		6.733e−02		1.951e−03	2.019e−03	9.660e+11		B+
$9d\ ^2D_{5/2}$	$5p\ ^2P_{3/2}$	16.07		1.157e−01		6.121e−03	6.287e−03	4.977e+11		B+
$9d\ ^2D_{5/2}$	$6p\ ^2P_{3/2}$	28.84		2.155e−01		2.046e−02	2.088e−02	2.880e+11		B+
$9d\ ^2D_{5/2}$	$7p\ ^2P_{3/2}$	54.90		4.846e−01		8.758e−02	8.886e−02	1.787e+11		B+
$9d\ ^2D_{5/2}$	$8p\ ^2P_{3/2}$	131.50		1.708e+00		7.395e−01	7.385e−01	1.098e+11		B
$9d\ ^2D_{5/2}$	$4f\ ^2F_{5/2}$	9.35		8.843e−05		2.721e−06	3.776e−06	1.126e+09		D+
$9d\ ^2D_{5/2}$	$5f\ ^2F_{5/2}$	16.96		4.306e−04		2.404e−05	2.865e−05	1.664e+09		C
$9d\ ^2D_{5/2}$	$6f\ ^2F_{5/2}$	30.47		1.612e−03		1.617e−04	1.774e−04	1.931e+09		B
$9d\ ^2D_{5/2}$	$7f\ ^2F_{5/2}$	58.60		6.543e−03		1.262e−03	1.322e−03	2.118e+09		B+
$9d\ ^2D_{5/2}$	$8f\ ^2F_{5/2}$	146.16		4.474e−02		2.153e−02	2.163e−02	2.328e+09		B+
$9d\ ^2D_{5/2}$	$4f\ ^2F_{7/2}$	9.37		1.913e−03		5.902e−05	7.641e−05	2.422e+10		D+
$9d\ ^2D_{5/2}$	$5f\ ^2F_{7/2}$	17.01		9.194e−03		5.147e−04	5.871e−04	3.534e+10		C+
$9d\ ^2D_{5/2}$	$6f\ ^2F_{7/2}$	30.55		3.406e−02		3.425e−03	3.658e−03	4.058e+10		B+
$9d\ ^2D_{5/2}$	$7f\ ^2F_{7/2}$	58.78		1.372e−01		2.655e−02	2.739e−02	4.414e+10		B+
$9d\ ^2D_{5/2}$	$8f\ ^2F_{7/2}$	146.94		9.375e−01		4.536e−01	4.525e−01	4.827e+10		B
$9f\ ^2F_{5/2}$	$3d\ ^2D_{3/2}$	4.60		3.827e−02		5.798e−04	6.302e−04	2.009e+12		B
$9f\ ^2F_{5/2}$	$4d\ ^2D_{3/2}$	9.10		8.898e−02		2.666e−03	2.761e−03	1.195e+12		B+
$9f\ ^2F_{5/2}$	$5d\ ^2D_{3/2}$	16.53		1.685e−01		9.174e−03	9.391e−03	6.854e+11		B+
$9f\ ^2F_{5/2}$	$6d\ ^2D_{3/2}$	29.61		3.277e−01		3.195e−02	3.252e−02	4.153e+11		B+
$9f\ ^2F_{5/2}$	$7d\ ^2D_{3/2}$	56.44		7.554e−01		1.404e−01	1.423e−01	2.636e+11		B+
$9f\ ^2F_{5/2}$	$8d\ ^2D_{3/2}$	136.41		2.765e+00		1.242e+00	1.242e+00	1.652e+11		B
$9f\ ^2F_{5/2}$	$3d\ ^2D_{5/2}$	4.63		2.648e−03		4.040e−05	4.356e−05	1.370e+11		C+
$9f\ ^2F_{5/2}$	$4d\ ^2D_{5/2}$	9.16		6.259e−03		1.887e−04	1.945e−04	8.301e+10		B
$9f\ ^2F_{5/2}$	$5d\ ^2D_{5/2}$	16.63		1.204e−02		6.591e−04	6.720e−04	4.840e+10		B+
$9f\ ^2F_{5/2}$	$6d\ ^2D_{5/2}$	29.79		2.372e−02		2.327e−03	2.363e−03	2.971e+10		B+
$9f\ ^2F_{5/2}$	$7d\ ^2D_{5/2}$	56.85		5.556e−02		1.040e−02	1.053e−02	1.911e+10		B+
$9f\ ^2F_{5/2}$	$8d\ ^2D_{5/2}$	138.02		2.094e−01		9.515e−02	9.512e−02	1.222e+10		B+
$9f\ ^2F_{5/2}$	$5g\ ^2G_{7/2}$	17.00		1.560e−03		8.728e−05	1.030e−04	6.000e+09		C+
$9f\ ^2F_{5/2}$	$6g\ ^2G_{7/2}$	30.48		1.025e−02		1.029e−03	1.114e−03	1.227e+10		B
$9f\ ^2F_{5/2}$	$7g\ ^2G_{7/2}$	58.42		5.630e−02		1.083e−02	1.125e−02	1.834e+10		B+
$9f\ ^2F_{5/2}$	$8g\ ^2G_{7/2}$	144.33		4.697e−01		2.232e−01	2.230e−01	2.507e+10		B+
$9f\ ^2F_{7/2}$	$3d\ ^2D_{5/2}$	4.63		5.519e−02		8.421e−04	8.895e−04	2.143e+12		B+
$9f\ ^2F_{7/2}$	$4d\ ^2D_{5/2}$	9.15		1.114e−01		3.356e−03	3.923e−03	1.108e+12		C+
$9f\ ^2F_{7/2}$	$5d\ ^2D_{5/2}$	16.62		1.796e−01		9.828e−03	1.345e−02	5.419e+11		D+
$9f\ ^2F_{7/2}$	$6d\ ^2D_{5/2}$	29.77		4.267e−01		4.183e−02	4.696e−02	4.014e+11		C+
$9f\ ^2F_{7/2}$	$7d\ ^2D_{5/2}$	56.77		1.027e+00		1.919e−01	2.077e−01	2.656e+11		B
$9f\ ^2F_{7/2}$	$8d\ ^2D_{5/2}$	137.56		1.988e+00		9.002e−01	1.849e+00	8.757e+10		E
$9f\ ^2F_{7/2}$	$8g\ ^2G_{7/2}$	143.83		1.839e−02		8.707e−03	7.831e−03	7.412e+08		C+
$9f\ ^2F_{7/2}$	$5g\ ^2G_{9/2}$	17.02		3.111e−03		1.743e−04	1.302e−04	8.957e+09		D+

Table S3 – continued from previous page

Upper level	Lower level	λ [RCI]	λ Ref.	gf [RCI]	gf Ref. [24]	S [RCI]	S [MBPT]	A [RCI]	A Ref.	Unc.
$9f\ ^2F_{7/2}$	$6g\ ^2G_{9/2}$	30.50		1.535e−02		1.541e−03	1.414e−03	1.375e+10		B
$9f\ ^2F_{7/2}$	$7g\ ^2G_{9/2}$	58.45		7.188e−02		1.383e−02	1.431e−02	1.754e+10		B+
$9f\ ^2F_{7/2}$	$8g\ ^2G_{9/2}$	144.27		6.603e−01		3.136e−01	2.832e−01	2.645e+10		C+
$9g\ ^2G_{7/2}$	$4f\ ^2F_{5/2}$	9.33		8.729e−02		2.680e−03	2.794e−03	8.367e+11		B+
$9g\ ^2G_{7/2}$	$5f\ ^2F_{5/2}$	16.90		2.502e−01		1.392e−02	1.423e−02	7.304e+11		B+
$9g\ ^2G_{7/2}$	$6f\ ^2F_{5/2}$	30.26		5.831e−01		5.810e−02	5.895e−02	5.309e+11		B+
$9g\ ^2G_{7/2}$	$7f\ ^2F_{5/2}$	57.84		1.501e+00		2.858e−01	2.889e−01	3.739e+11		B+
$9g\ ^2G_{7/2}$	$8f\ ^2F_{5/2}$	141.57		6.116e+00		2.851e+00	2.852e+00	2.544e+11		B
$9g\ ^2G_{7/2}$	$4f\ ^2F_{7/2}$	9.35		3.173e−03		9.769e−05	1.012e−04	3.025e+10		C+
$9g\ ^2G_{7/2}$	$5f\ ^2F_{7/2}$	16.94		9.190e−03		5.126e−04	5.213e−04	2.670e+10		B
$9g\ ^2G_{7/2}$	$6f\ ^2F_{7/2}$	30.34		2.159e−02		2.157e−03	2.179e−03	1.956e+10		B+
$9g\ ^2G_{7/2}$	$7f\ ^2F_{7/2}$	58.02		5.601e−02		1.070e−02	1.078e−02	1.387e+10		B+
$9g\ ^2G_{7/2}$	$8f\ ^2F_{7/2}$	142.30		2.313e−01		1.083e−01	1.082e−01	9.523e+09		B+
$9g\ ^2G_{7/2}$	$6h\ ^2H_{9/2}$	30.48		2.839e−03		2.849e−04	2.929e−04	2.548e+09		B
$9g\ ^2G_{7/2}$	$7h\ ^2H_{9/2}$	58.36		2.775e−02		5.332e−03	5.409e−03	6.795e+09		B+
$9g\ ^2G_{7/2}$	$8h\ ^2H_{9/2}$	143.68		3.205e−01		1.516e−01	1.501e−01	1.294e+10		B+
$9g\ ^2G_{9/2}$	$4f\ ^2F_{7/2}$	9.35		1.130e−01		3.478e−03	3.603e−03	8.620e+11		B+
$9g\ ^2G_{9/2}$	$5f\ ^2F_{7/2}$	16.94		3.246e−01		1.810e−02	1.841e−02	7.548e+11		B+
$9g\ ^2G_{9/2}$	$6f\ ^2F_{7/2}$	30.33		7.582e−01		7.570e−02	7.647e−02	5.499e+11		B+
$9g\ ^2G_{9/2}$	$7f\ ^2F_{7/2}$	57.97		1.956e+00		3.733e−01	3.761e−01	3.881e+11		B+
$9g\ ^2G_{9/2}$	$8f\ ^2F_{7/2}$	141.99		8.007e+00		3.743e+00	3.736e+00	2.649e+11		B
$9g\ ^2G_{9/2}$	$6h\ ^2H_{11/2}$	30.50		3.443e−03		3.457e−04	3.553e−04	2.469e+09		B
$9g\ ^2G_{9/2}$	$7h\ ^2H_{11/2}$	58.38		3.370e−02		6.477e−03	6.571e−03	6.596e+09		B+
$9g\ ^2G_{9/2}$	$8h\ ^2H_{11/2}$	143.67		3.892e−01		1.841e−01	1.822e−01	1.258e+10		B+
$9h\ ^2H_{11/2}$	$5g\ ^2G_{9/2}$	17.00		2.524e−01		1.413e−02	1.427e−02	4.855e+11		B+
$9h\ ^2H_{11/2}$	$6g\ ^2G_{9/2}$	30.45		9.109e−01		9.131e−02	9.179e−02	5.462e+11		B+
$9h\ ^2H_{11/2}$	$7g\ ^2G_{9/2}$	58.25		2.848e+00		5.462e−01	5.486e−01	4.666e+11		B+
$9h\ ^2H_{11/2}$	$8g\ ^2G_{9/2}$	143.04		1.302e+01		6.132e+00	6.118e+00	3.537e+11		C+
$9h\ ^2H_{11/2}$	$7i\ ^2I_{13/2}$	58.39		1.018e−02		1.957e−03	1.967e−03	1.660e+09		B+
$9h\ ^2H_{11/2}$	$8i\ ^2I_{13/2}$	143.63		2.160e−01		1.021e−01	1.008e−01	5.821e+09		B+
$9h\ ^2H_{9/2}$	$5g\ ^2G_{7/2}$	16.98		2.064e−01		1.153e−02	1.165e−02	4.775e+11		B+
$9h\ ^2H_{9/2}$	$6g\ ^2G_{7/2}$	30.41		7.435e−01		7.443e−02	7.483e−02	5.363e+11		B+
$9h\ ^2H_{9/2}$	$7g\ ^2G_{7/2}$	58.17		2.320e+00		4.444e−01	4.464e−01	4.573e+11		B+
$9h\ ^2H_{9/2}$	$8g\ ^2G_{7/2}$	142.81		1.058e+01		4.973e+00	4.962e+00	3.459e+11		C+
$9h\ ^2H_{9/2}$	$5g\ ^2G_{9/2}$	17.00		4.618e−03		2.585e−04	2.612e−04	1.066e+10		B
$9h\ ^2H_{9/2}$	$6g\ ^2G_{9/2}$	30.46		1.676e−02		1.681e−03	1.690e−03	1.205e+10		B+
$9h\ ^2H_{9/2}$	$7g\ ^2G_{9/2}$	58.28		5.267e−02		1.011e−02	1.015e−02	1.034e+10		B+
$9h\ ^2H_{9/2}$	$8g\ ^2G_{9/2}$	143.25		2.424e−01		1.143e−01	1.141e−01	7.881e+09		B+
$9h\ ^2H_{9/2}$	$7i\ ^2I_{11/2}$	58.37		8.654e−03		1.663e−03	1.671e−03	1.694e+09		B+

Table S3 – continued from previous page

Upper level	Lower level	λ [RCI]	λ Ref.	gf [RCI]	gf Ref. [24]	S [RCI]	S [MBPT]	A [RCI]	A Ref.	Unc.
$9h\ ^2H_{9/2}$	$8i\ ^2I_{11/2}$	143.62		1.836e−01		8.679e−02	8.568e−02	5.935e+09		B+
$9i\ ^2I_{11/2}$	$6h\ ^2H_{9/2}$	30.45		5.968e−01		5.984e−02	5.999e−02	3.577e+11		B+
$9i\ ^2I_{11/2}$	$7h\ ^2H_{9/2}$	58.26		2.973e+00		5.703e−01	5.719e−01	4.869e+11		B+
$9i\ ^2I_{11/2}$	$8h\ ^2H_{9/2}$	143.10		1.676e+01		7.898e+00	7.881e+00	4.550e+11		C+
$9i\ ^2I_{11/2}$	$6h\ ^2H_{11/2}$	30.48		9.094e−03		9.127e−04	9.150e−04	5.439e+09		B+
$9i\ ^2I_{11/2}$	$7h\ ^2H_{11/2}$	58.33		4.557e−02		8.753e−03	8.778e−03	7.444e+09		B+
$9i\ ^2I_{11/2}$	$8h\ ^2H_{11/2}$	143.40		2.589e−01		1.222e−01	1.220e−01	6.999e+09		B+
$9i\ ^2I_{13/2}$	$6h\ ^2H_{11/2}$	30.48		7.058e−01		7.082e−02	7.100e−02	3.620e+11		B+
$9i\ ^2I_{13/2}$	$7h\ ^2H_{11/2}$	58.31		3.520e+00		6.758e−01	6.777e−01	4.933e+11		B
$9i\ ^2I_{13/2}$	$8h\ ^2H_{11/2}$	143.25		1.989e+01		9.379e+00	9.357e+00	4.617e+11		C+
$9p\ ^2P_{1/2}$	$3s\ ^2S_{1/2}$	4.14		6.352e−03		8.649e−05	8.738e−05	1.238e+12		C+
$9p\ ^2P_{1/2}$	$4s\ ^2S_{1/2}$	8.39		1.133e−02		3.130e−04	3.220e−04	5.368e+11		B
$9p\ ^2P_{1/2}$	$5s\ ^2S_{1/2}$	15.45		2.052e−02		1.044e−03	1.074e−03	2.867e+11		B+
$9p\ ^2P_{1/2}$	$6s\ ^2S_{1/2}$	27.90		4.054e−02		3.723e−03	3.810e−03	1.737e+11		B+
$9p\ ^2P_{1/2}$	$7s\ ^2S_{1/2}$	53.41		9.746e−02		1.714e−02	1.743e−02	1.139e+11		B+
$9p\ ^2P_{1/2}$	$8s\ ^2S_{1/2}$	129.19		3.778e−01		1.607e−01	1.603e−01	7.551e+10		B+
$9p\ ^2P_{1/2}$	$3d\ ^2D_{3/2}$	4.62		1.200e−03		1.825e−05	1.586e−05	1.877e+11		C+
$9p\ ^2P_{1/2}$	$4d\ ^2D_{3/2}$	9.16		4.504e−03		1.359e−04	1.377e−04	1.789e+11		B
$9p\ ^2P_{1/2}$	$5d\ ^2D_{3/2}$	16.75		1.303e−02		7.186e−04	7.379e−04	1.550e+11		B+
$9p\ ^2P_{1/2}$	$6d\ ^2D_{3/2}$	30.30		3.705e−02		3.697e−03	3.781e−03	1.346e+11		B+
$9p\ ^2P_{1/2}$	$7d\ ^2D_{3/2}$	59.00		1.265e−01		2.457e−02	2.498e−02	1.212e+11		B+
$9p\ ^2P_{1/2}$	$8d\ ^2D_{3/2}$	152.37		8.101e−01		4.064e−01	4.057e−01	1.164e+11		B
$9p\ ^2P_{3/2}$	$3s\ ^2S_{1/2}$	4.13		1.121e−02		1.525e−04	1.525e−04	1.095e+12		B
$9p\ ^2P_{3/2}$	$4s\ ^2S_{1/2}$	8.37		1.938e−02		5.342e−04	5.487e−04	4.608e+11		B
$9p\ ^2P_{3/2}$	$5s\ ^2S_{1/2}$	15.40		3.418e−02		1.732e−03	1.782e−03	2.405e+11		B+
$9p\ ^2P_{3/2}$	$6s\ ^2S_{1/2}$	27.71		6.558e−02		5.984e−03	6.130e−03	1.424e+11		B+
$9p\ ^2P_{3/2}$	$7s\ ^2S_{1/2}$	52.75		1.513e−01		2.627e−02	2.673e−02	9.067e+10		B+
$9p\ ^2P_{3/2}$	$8s\ ^2S_{1/2}$	125.38		5.345e−01		2.206e−01	2.199e−01	5.670e+10		B+
$9p\ ^2P_{3/2}$	$9s\ ^2S_{1/2}$	1942.34		1.465e+00		9.368e+00	9.336e+00	6.475e+08		D+
$9p\ ^2P_{3/2}$	$3d\ ^2D_{3/2}$	4.61		1.844e−04		2.800e−06	2.358e−06	1.445e+10		C
$9p\ ^2P_{3/2}$	$4d\ ^2D_{3/2}$	9.14		7.051e−04		2.123e−05	2.155e−05	1.407e+10		C+
$9p\ ^2P_{3/2}$	$5d\ ^2D_{3/2}$	16.68		2.073e−03		1.139e−04	1.172e−04	1.242e+10		B
$9p\ ^2P_{3/2}$	$6d\ ^2D_{3/2}$	30.09		5.937e−03		5.881e−04	6.025e−04	1.093e+10		B
$9p\ ^2P_{3/2}$	$7d\ ^2D_{3/2}$	58.19		2.015e−02		3.859e−03	3.926e−03	9.921e+09		B+
$9p\ ^2P_{3/2}$	$8d\ ^2D_{3/2}$	147.10		1.223e−01		5.921e−02	5.909e−02	9.423e+09		B+
$9p\ ^2P_{3/2}$	$3d\ ^2D_{5/2}$	4.65		1.772e−03		2.710e−05	2.189e−05	1.368e+11		C
$9p\ ^2P_{3/2}$	$4d\ ^2D_{5/2}$	9.20		6.791e−03		2.057e−04	2.026e−04	1.338e+11		B
$9p\ ^2P_{3/2}$	$5d\ ^2D_{5/2}$	16.78		1.993e−02		1.101e−03	1.111e−03	1.181e+11		B+
$9p\ ^2P_{3/2}$	$6d\ ^2D_{5/2}$	30.27		5.689e−02		5.671e−03	5.754e−03	1.035e+11		B+

Table S3 – continued from previous page

Upper level	Lower level	λ [RCI]	λ Ref.	gf [RCI]	gf Ref. [24]	S [RCI]	S [MBPT]	A [RCI]	A Ref.	Unc.
$9p\ ^2P_{3/2}$	$7d\ ^2D_{5/2}$	58.63		1.933e−01		3.731e−02	3.781e−02	9.380e+10		B+
$9p\ ^2P_{3/2}$	$8d\ ^2D_{5/2}$	148.97		1.191e+00		5.841e−01	5.819e−01	8.949e+10		B
$9s\ ^2S_{1/2}$	$3p\ ^2P_{1/2}$	4.28		1.650e−03		2.328e−05	2.385e−05	2.999e+11		C+
$9s\ ^2S_{1/2}$	$4p\ ^2P_{1/2}$	8.65		4.192e−03		1.194e−04	1.304e−04	1.867e+11		B
$9s\ ^2S_{1/2}$	$5p\ ^2P_{1/2}$	15.94		9.902e−03		5.196e−04	5.551e−04	1.300e+11		B
$9s\ ^2S_{1/2}$	$6p\ ^2P_{1/2}$	28.90		2.445e−02		2.327e−03	2.431e−03	9.763e+10		B+
$9s\ ^2S_{1/2}$	$7p\ ^2P_{1/2}$	56.06		7.371e−02		1.360e−02	1.399e−02	7.823e+10		B+
$9s\ ^2S_{1/2}$	$8p\ ^2P_{1/2}$	141.65		3.996e−01		1.864e−01	1.873e−01	6.642e+10		B+
$9s\ ^2S_{1/2}$	$3p\ ^2P_{3/2}$	4.42		4.080e−03		5.932e−05	5.915e−05	6.980e+11		C+
$9s\ ^2S_{1/2}$	$4p\ ^2P_{3/2}$	8.87		1.020e−02		2.978e−04	3.137e−04	4.321e+11		B
$9s\ ^2S_{1/2}$	$5p\ ^2P_{3/2}$	16.31		2.388e−02		1.282e−03	1.338e−03	2.996e+11		B+
$9s\ ^2S_{1/2}$	$6p\ ^2P_{3/2}$	29.60		5.903e−02		5.752e−03	5.928e−03	2.248e+11		B+
$9s\ ^2S_{1/2}$	$7p\ ^2P_{3/2}$	57.69		1.806e−01		3.431e−02	3.501e−02	1.810e+11		B+
$9s\ ^2S_{1/2}$	$8p\ ^2P_{3/2}$	148.74		1.044e+00		5.111e−01	5.122e−01	1.573e+11		B

Table S4: The present lifetimes (10^{-9} s) in length (τ_l) and velocity (τ_v) gauges for Ar^{7+}, Kr^{25+} and Xe^{43+} along with the uncertainty percentage in the τ_l .

Level	Ar^{7+}			Kr^{25+}			Xe^{43+}		
	τ_l	τ_v	Unc.%	τ_l	τ_v	Unc.%	τ_l	τ_v	Unc.%
$3p\ ^2P_{1/2}$	4.154e−01	4.109e−01	5.24	8.723e−02	7.908e−02	2.45	4.270e−02	4.023e−02	1.86
$3p\ ^2P_{3/2}$	3.911e−01	3.873e−01	5.22	4.604e−02	4.360e−02	2.48	6.354e−03	6.218e−03	1.82
$3d\ ^2D_{3/2}$	1.331e−01	1.338e−01	4.19	2.696e−02	2.795e−02	2.45	5.795e−03	5.837e−03	1.98
$3d\ ^2D_{5/2}$	1.374e−01	1.385e−01	4.89	3.673e−02	3.889e−02	2.66	1.540e−02	1.570e−02	1.82
$4s\ ^2S_{1/2}$	2.964e−02	2.962e−02	4.66	5.433e−04	5.412e−04	1.65	7.366e−05	7.329e−05	1.19
$4p\ ^2P_{1/2}$	5.127e−02	5.163e−02	5.89	5.220e−04	5.269e−04	1.80	6.24e−05	6.235e−05	1.3
$4p\ ^2P_{3/2}$	5.233e−02	5.279e−02	4.93	5.737e−04	5.813e−04	1.62	7.798e−05	7.8795e−05	1.64
$4d\ ^2D_{3/2}$	5.515e−02	5.503e−02	5.48	3.182e−04	3.184e−04	1.32	3.851e−05	3.836e−05	1.06
$4d\ ^2D_{5/2}$	5.445e−02	5.426e−02	5.41	3.147e−04	3.164e−04	1.42	3.781e−05	3.767e−05	1.37
$4f\ ^2F_{5/2}$	1.616e−02	1.613e−02	4.06	1.486e−04	1.477e−04	2.10	1.839e−05	1.833e−05	1.62
$4f\ ^2F_{7/2}$	1.616e−02	1.614e−02	4.30	1.493e−04	1.483e−04	2.22	1.862e−05	1.858e−05	1.65
$5s\ ^2S_{1/2}$	4.145e−02	4.138e−02	4.89	6.917e−04	6.882e−04	1.78	9.234e−05	9.199e−05	1.36
$5p\ ^2P_{1/2}$	6.616e−02	6.621e−02	6.31	6.561e−04	6.593e−04	2.14	7.869e−05	7.861e−05	1.36
$5p\ ^2P_{3/2}$	6.731e−02	6.761e−02	5.37	7.135e−04	7.214e−04	1.76	9.565e−05	9.558e−05	1.22
$5d\ ^2D_{3/2}$	6.744e−02	6.723e−02	6.36	4.303e−04	4.299e−04	1.46	5.263e−05	5.242e−05	0.89
$5d\ ^2D_{5/2}$	6.646e−02	6.613e−02	6.33	4.275e−04	4.325e−04	1.40	5.229e−05	5.209e−05	0.95
$5f\ ^2F_{5/2}$	3.012e−02	2.998e−02	5.01	2.812e−04	2.798e−04	2.92	3.504e−05	3.491e−05	2.26

Table S4 – continued from previous page

Level	Ar^{7+}			Kr^{25+}			Xe^{43+}		
	τ_l	τ_v	Unc.%	τ_l	τ_v	Unc.%	τ_l	τ_v	Unc.%
$5f\ ^2F_{7/2}$	3.009e−02	3.001e−02	5.20	2.829e−04	2.802e−04	3.20	3.550e−05	3.541e−05	2.29
$5g\ ^2G_{7/2}$	5.719e−02	5.718e−02	3.13	5.125e−04	5.129e−04	1.54	6.234e−05	6.224e−05	1.07
$5g\ ^2G_{9/2}$	5.720e−02	5.719e−02	3.24	5.138e−04	5.148e−04	1.60	6.269e−05	6.262e−05	0.94
$6s\ ^2S_{1/2}$	6.324e−02	6.296e−02	5.19	9.934e−04	9.846e−04	2.13	1.31e−04	1.31e−04	1.57
$6p\ ^2P_{1/2}$	9.661e−02	9.577e−02	6.70	9.362e−04	9.415e−04	2.53	1.121e−04	1.121e−04	1.74
$6p\ ^2P_{3/2}$	9.785e−02	9.772e−02	5.75	1.014e−03	1.016e−03	1.99	1.342e−04	1.342e−04	1.46
$6d\ ^2D_{3/2}$	9.577e−02	9.518e−02	7.55	6.366e−04	6.366e−04	1.75	7.821e−05	7.793e−05	1.05
$6d\ ^2D_{5/2}$	9.372e−02	9.296e−02	7.51	6.270e−04	6.407e−04	1.59	7.814e−05	7.787e−05	1.11
$6f\ ^2F_{5/2}$	5.099e−02	5.016e−02	7.06	4.761e−04	4.741e−04	3.39	5.952e−05	5.928e−05	2.6
$6f\ ^2F_{7/2}$	5.050e−02	5.026e−02	6.69	4.802e−04	4.717e−04	4.09	6.034e−05	6.017e−05	2.6
$6g\ ^2G_{7/2}$	9.801e−02	9.795e−02	3.22	8.777e−04	8.779e−04	1.24	1.068e−04	1.066e−04	0.87
$6g\ ^2G_{9/2}$	9.802e−02	9.797e−02	3.24	8.801e−04	8.810e−04	1.29	1.074e−04	1.072e−04	0.92
$6h\ ^2H_{9/2}$	1.484e−01	1.484e−01	5.35	1.329e−03	1.327e−03	2.15	1.618e−04	1.617e−04	1.03
$6h\ ^2H_{11/2}$	1.484e−01	1.484e−01	5.47	1.331e−03	1.327e−03	2.20	1.623e−04	1.622e−04	1.05
$7s\ ^2S_{1/2}$	9.504e−02	9.418e−02	7.35	1.414e−03	1.394e−03	2.47	1.862e−04	1.859e−04	1.97
$7p\ ^2P_{1/2}$	1.308e−01	1.392e−01	6.81	1.334e−03	1.327e−03	2.95	1.598e−04	1.599e−04	2.17
$7p\ ^2P_{3/2}$	1.421e−01	1.414e−01	6.98	1.445e−03	1.443e−03	2.39	1.894e−04	1.896e−04	1.81
$7d\ ^2D_{3/2}$	1.232e−01	1.305e−01	7.19	9.296e−04	9.237e−04	2.30	1.143e−04	1.140e−04	1.46
$7d\ ^2D_{5/2}$	1.341e−01	1.321e−01	14.00	9.325e−04	9.217e−04	2.91	1.146e−04	1.142e−04	1.46
$7f\ ^2F_{5/2}$	7.359e−02	7.797e−02	4.61	7.442e−04	7.423e−04	3.64	9.332e−05	9.292e−05	2.85
$7f\ ^2F_{7/2}$	7.886e−02	7.814e−02	8.98	7.471e−04	7.395e−04	3.47	9.464e−05	9.434e−05	2.81
$7g\ ^2G_{7/2}$	1.543e−01	1.540e−01	3.40	1.381e−03	1.375e−03	1.35	1.679e−04	1.675e−04	0.94
$7g\ ^2G_{9/2}$	1.543e−01	1.541e−01	3.40	1.384e−03	1.385e−03	1.41	1.689e−04	1.686e−04	0.97
$7h\ ^2H_{9/2}$	2.345e−01	2.344e−01	5.05	2.104e−03	2.095e−03	1.90	2.556e−04	2.553e−04	1.03
$7h\ ^2H_{11/2}$	2.345e−01	2.345e−01	5.14	2.103e−03	2.093e−03	1.94	2.564e−04	2.562e−04	1.05
$7i\ ^2I_{11/2}$	3.294e−01	3.295e−01	9.05	2.954e−03	2.955e−03	3.33	3.595e−04	3.593e−04	1.45
$7i\ ^2I_{13/2}$	3.295e−01	3.295e−01	9.22	2.955e−03	2.957e−03	3.39	3.601e−04	3.600e−04	1.48
$8s\ ^2S_{1/2}$				1.913e−03	1.907e−03	5.27	2.589e−04	2.590e−04	3.47
$8p\ ^2P_{1/2}$				1.862e−03	1.837e−03	6.45	2.226e−04	2.231e−04	4.12
$8p\ ^2P_{3/2}$				2.037e−03	1.994e−03	5.83	2.620e−04	2.628e−04	3.82
$8d\ ^2D_{3/2}$				1.295e−03	1.294e−03	6.02	1.619e−04	1.616e−04	3.62
$8d\ ^2D_{5/2}$				1.289e−03	1.311e−03	6.19	1.627e−04	1.623e−04	3.63
$8f\ ^2F_{5/2}$	1.129e−01	1.196e−01	27.81	1.098e−03	1.091e−03	4.89	1.380e−04	1.373e−04	3.39
$8f\ ^2F_{7/2}$	1.170e−01	1.149e−01	25.60	1.114e−03	1.097e−03	5.10	1.400e−04	1.395e−04	3.34
$8g\ ^2G_{7/2}$	2.287e−01	2.278e−01	12.20	2.039e−03	2.041e−03	2.93	2.484e−04	2.478e−04	2.77
$8g\ ^2G_{9/2}$	2.287e−01	2.279e−01	11.47	2.042e−03	2.052e−03	2.85	2.499e−04	2.494e−04	2.9
$8h\ ^2H_{9/2}$	3.479e−01	3.476e−01	7.56	3.133e−03	3.094e−03	2.42	3.790e−04	3.784e−04	3.9
$8h\ ^2H_{11/2}$	3.480e−01	3.477e−01	7.35	3.118e−03	3.108e−03	2.40	3.802e−04	3.798e−04	4.11

Table S4 – continued from previous page

Level	Ar^{7+}			Kr^{25+}			Xe^{43+}		
	τ_l	τ_v	Unc.%	τ_l	τ_v	Unc.%	τ_l	τ_v	Unc.%
$8i\ ^2I_{11/2}$	4.899e−01	4.899e−01	9.08	4.395e−03	4.386e−03	3.19	5.344e−04	5.341e−04	6.31
$8i\ ^2I_{13/2}$	4.900e−01	4.900e−01	9.23	4.395e−03	4.393e−03	3.23	5.354e−04	5.352e−04	6.58
$9s\ ^2S_{1/2}$				2.552e−03	2.699e−03	5.94	3.507e−04	3.519e−04	3.63
$9p\ ^2P_{1/2}$				2.583e−03	2.557e−03	8.06	3.014e−04	3.032e−04	4.35
$9p\ ^2P_{3/2}$				2.706e−03	2.621e−03	6.54	3.530e−04	3.558e−04	4.04
$9d\ ^2D_{3/2}$				1.707e−03	1.770e−03	6.24	2.221e−04	2.223e−04	3.82
$9d\ ^2D_{5/2}$				1.558e−03	1.797e−03	8.27	2.233e−04	2.234e−04	3.79
$9f\ ^2F_{5/2}$	1.905e−01	1.741e−01	33.24	1.544e−03	1.535e−03	5.27	1.951e−04	1.939e−04	3.75
$9f\ ^2F_{7/2}$	1.701e−01	1.617e−01	29.08	1.661e−03	1.551e−03	13.32	2.163e−04	2.186e−04	7.05
$9g\ ^2G_{7/2}$	3.254e−01	3.218e−01	13.96	2.846e−03	2.894e−03	3.13	3.510e−04	3.499e−04	2.53
$9g\ ^2G_{9/2}$	3.254e−01	3.219e−01	13.18	2.876e−03	2.895e−03	3.06	3.519e−04	3.522e−04	2.62
$9h\ ^2H_{9/2}$	4.928e−01	4.914e−01	8.60	4.461e−03	4.373e−03	2.54	5.360e−04	5.348e−04	3.2
$9h\ ^2H_{11/2}$	4.928e−01	4.916e−01	8.31	4.404e−03	4.402e−03	2.51	5.377e−04	5.367e−04	3.35
$9i\ ^2I_{11/2}$	6.950e−01	6.947e−01	9.15	6.224e−03	6.241e−03	3.17	7.578e−04	7.571e−04	4.81
$9i\ ^2I_{13/2}$	6.950e−01	6.948e−01	9.21	6.232e−03	6.239e−03	3.20	7.593e−04	7.587e−04	5.01

Table S5: The present HFS constants A_J/μ_I (MHz/units of μ_I), B_J/Q (MHz/b) and Landé g_J factors for Ar^{7+}, Kr^{25+} and Xe^{43+}.

Level	Ar^{7+}			Kr^{25+}			Xe^{43+}		
	A_J/μ_I	B_J/Q	g_J	A_J/μ_I	B_J/Q	g_J	A_J/μ_I	B_J/Q	g_J
$3s\ ^2S_{1/2}$	5.638e+03	0.000	1.999547	7.246e+04	0.000	1.997032	1.045e+06	0.000	1.990910
$3p\ ^2P_{1/2}$	1.529e+03	0.000	0.666249	2.216e+04	0.000	0.663247	3.317e+05	0.000	0.657639
$3p\ ^2P_{3/2}$	3.020e+02	1.953e+03	1.332998	3.995e+03	3.403e+04	1.330819	5.000e+04	1.460e+05	1.326347
$3d\ ^2D_{3/2}$	8.727e+01	1.827e+02	0.799752	1.882e+03	5.119e+03	0.797589	2.599e+04	2.458e+04	0.793362
$3d\ ^2D_{5/2}$	9.692	2.603e+02	1.199764	6.263e+02	7.146e+03	1.198288	9.306e+03	3.263e+04	1.193665
$4s\ ^2S_{1/2}$	1.988e+03	0.000	1.999785	2.859e+04	0.000	1.996213	4.212e+05	0.000	1.995108
$4p\ ^2P_{1/2}$	5.640e+02	0.000	0.666465	8.814e+03	0.000	0.665369	1.349e+05	0.000	0.661820
$4p\ ^2P_{3/2}$	1.111e+02	7.194e+02	1.333172	1.577e+03	1.343e+04	1.332430	2.049e+04	6.000e+04	1.329548
$4d\ ^2D_{3/2}$	3.721e+01	7.661e+01	0.799867	7.703e+02	2.179e+03	0.798942	1.084e+04	1.061e+04	0.796358
$4d\ ^2D_{5/2}$	6.419	1.093e+02	1.199872	2.926e+02	2.997e+03	1.199508	4.241e+03	1.396e+04	1.196504
$4f\ ^2F_{5/2}$	7.464	4.696e+01	0.857032	1.923e+02	1.148e+03	0.855766	2.907e+03	4.979e+03	0.853788
$4f\ ^2F_{7/2}$	3.586	5.475e+01	1.142748	1.078e+02	1.332e+03	1.141750	1.478e+03	5.706e+03	1.139554
$5s\ ^2S_{1/2}$	9.242e+02	0.000	1.999875	1.424e+04	0.000	1.994794	2.099e+05	0.000	1.996949
$5p\ ^2P_{1/2}$	2.693e+02	0.000	0.666547	4.397e+03	0.000	0.663286	6.767e+04	0.000	0.663642
$5p\ ^2P_{3/2}$	5.307e+01	3.433e+02	1.333238	7.759e+02	6.607e+03	1.335247	1.033e+04	3.028e+04	1.330959
$5d\ ^2D_{3/2}$	1.881e+01	3.879e+01	0.799918	3.893e+02	1.113e+03	0.798021	5.518e+03	5.457e+03	0.797697
$5d\ ^2D_{5/2}$	3.810	5.551e+01	1.199921	1.512e+02	1.502e+03	1.199913	2.211e+03	7.154e+03	1.197786

Table S5 – continued from previous page

Level	Ar^{7+}			Kr^{25+}			Xe^{43+}		
	A_J/μ_I	B_J/Q	g_J	A_J/μ_I	B_J/Q	g_J	A_J/μ_I	B_J/Q	g_J
$5f\ ^2F_{5/2}$	3.881	2.308e+01	0.857072	9.841e+01	5.710e+02	0.855561	1.503e+03	2.521e+03	0.854995
$5f\ ^2F_{7/2}$	1.754	2.691e+01	1.142787	5.524e+01	6.618e+02	1.142248	7.556e+02	2.884e+03	1.140742
$5g\ ^2G_{7/2}$	1.580	1.451e+01	0.888820	4.263e+01	3.258e+02	0.888118	6.193e+02	1.438e+03	0.886789
$5g\ ^2G_{9/2}$	1.000	1.582e+01	1.111042	2.666e+01	3.528e+02	1.110779	3.883e+02	1.556e+03	1.109025
$6s\ ^2S_{1/2}$	5.021e+02	0.000	1.999919	8.148e+03	0.000	1.993515	1.193e+05	0.000	1.997918
$6p\ ^2P_{1/2}$	1.489e+02	0.000	0.666587	2.536e+03	0.000	0.675851	3.865e+04	0.000	0.664599
$6p\ ^2P_{3/2}$	2.935e+01	1.897e+02	1.333271	4.501e+02	3.831e+03	1.331333	5.916e+03	1.736e+04	1.331705
$6d\ ^2D_{3/2}$	1.067e+01	2.205e+01	0.799944	2.242e+02	6.444e+02	0.799417	3.181e+03	3.160e+03	0.798412
$6d\ ^2D_{5/2}$	2.348	3.182e+01	1.199946	8.597e+01	8.472e+02	1.189457	1.288e+03	4.135e+03	1.198474
$6f\ ^2F_{5/2}$	2.259	1.305e+01	0.857093	5.691e+01	3.254e+02	0.857994	8.727e+02	1.452e+03	0.855653
$6f\ ^2F_{7/2}$	9.905e−01	1.522e+01	1.142809	3.204e+01	3.776e+02	1.142260	4.378e+02	1.660e+03	1.141389
$6g\ ^2G_{7/2}$	9.146e−01	8.334	0.888841	2.478e+01	1.878e+02	0.889239	3.596e+02	8.300e+02	0.887430
$6g\ ^2G_{9/2}$	5.769e−01	9.088	1.111063	1.535e+01	2.027e+02	1.110249	2.242e+02	8.976e+02	1.109662
$6h\ ^2H_{9/2}$	4.749e−01	4.918	0.909043	1.272e+01	1.174e+02	0.907287	1.853e+02	4.945e+02	0.907643
$6h\ ^2H_{11/2}$	3.287e−01	5.201	1.090861	8.781	1.237e+02	1.090650	1.279e+02	5.208e+02	1.089466
$7s\ ^2S_{1/2}$	3.017e+02	0.000	1.999945	5.133e+03	0.000	1.996592	7.418e+04	0.000	1.998491
$7p\ ^2P_{1/2}$	9.062e+01	0.000	0.666607	1.605e+03	0.000	0.668601	2.412e+04	0.000	0.665163
$7p\ ^2P_{3/2}$	1.787e+01	1.154e+02	1.333290	2.773e+02	2.360e+03	1.334734	3.700e+03	1.086e+04	1.332149
$7d\ ^2D_{3/2}$	1.817	3.767	0.800009	1.446e+02	4.169e+02	0.804392	1.998e+03	1.989e+03	0.798839
$7d\ ^2D_{5/2}$	1.524	1.983e+01	1.199962	5.892e+01	5.663e+02	1.203337	8.129e+02	2.600e+03	1.198885
$7f\ ^2F_{5/2}$	1.425	8.092	0.857106	3.592e+01	2.037e+02	0.857888	5.503e+02	9.118e+02	0.856049
$7f\ ^2F_{7/2}$	6.141e−01	9.434	1.142822	2.010e+01	2.350e+02	1.150023	2.760e+02	1.042e+03	1.141780
$7g\ ^2G_{7/2}$	5.758e−01	5.220	0.888853	1.557e+01	1.171e+02	0.885718	2.269e+02	5.216e+02	0.887817
$7g\ ^2G_{9/2}$	3.622e−01	5.692	1.111076	9.643	1.270e+02	1.110450	1.410e+02	5.638e+02	1.110047
$7h\ ^2H_{9/2}$	2.990e−01	3.092	0.909056	7.992	7.366e+01	0.903819	1.168e+02	3.118e+02	0.908027
$7h\ ^2H_{11/2}$	2.069e−01	3.270	1.090874	5.538	7.796e+01	1.089796	8.057e+01	3.283e+02	1.089849
$7i\ ^2I_{11/2}$	1.750e−01	2.037	0.923042	4.681	4.527e+01	0.922408	6.819e+01	1.993e+02	0.922017
$7i\ ^2I_{13/2}$	1.283e−01	2.118	1.076888	3.429	4.701e+01	1.076027	4.993e+01	2.068e+02	1.075865
$8s\ ^2S_{1/2}$	1.942e+02	0.000	1.999963	3.441e+03	0.000	2.004008	4.923e+04	0.000	1.998858
$8p\ ^2P_{1/2}$	5.898e+01	0.000	0.666610	1.061e+03	0.000	0.660343	1.606e+04	0.000	0.665525
$8p\ ^2P_{3/2}$	1.164e+01	7.514e+01	1.333301	1.901e+02	1.618e+03	1.319850	2.466e+03	7.240e+03	1.332432
$8d\ ^2D_{3/2}$	2.344	4.858	0.799976	9.561e+01	2.758e+02	0.797919	1.335e+03	1.331e+03	0.799114
$8d\ ^2D_{5/2}$	1.034	1.313e+01	1.199972	3.938e+01	3.769e+02	1.193549	5.452e+02	1.739e+03	1.199150
$8f\ ^2F_{5/2}$	9.538e−01	5.356	0.857115	2.435e+01	1.371e+02	0.859304	3.688e+02	6.096e+02	0.856306
$8f\ ^2F_{7/2}$	4.066e−01	6.244	1.142830	1.351e+01	1.571e+02	1.145408	1.849e+02	6.960e+02	1.142034
$8g\ ^2G_{7/2}$	3.854e−01	3.482	0.888861	1.040e+01	7.802e+01	0.888774	1.521e+02	3.488e+02	0.888068
$8g\ ^2G_{9/2}$	2.420e−01	3.796	1.111085	6.443	8.467e+01	1.114519	9.437e+01	3.770e+02	1.110297
$8h\ ^2H_{9/2}$	2.003e−01	2.069	0.909064	5.313	4.875e+01	0.910014	7.829e+01	2.090e+02	0.908276

Table S5 – continued from previous page

Level	Ar^{7+}			Kr^{25+}			Xe^{43+}		
	A_J/μ_I	B_J/Q	g_J	A_J/μ_I	B_J/Q	g_J	A_J/μ_I	B_J/Q	g_J
$8h\ ^2H_{11/2}$	1.386e−01	2.188	1.090882	3.708	5.222e+01	1.090302	5.399e+01	2.200e+02	1.090097
$8i\ ^2I_{11/2}$	1.172e−01	1.364	0.923050	3.141	3.035e+01	0.922794	4.571e+01	1.337e+02	0.922265
$8i\ ^2I_{13/2}$	8.595e−02	1.419	1.076896	2.299	3.159e+01	1.078134	3.347e+01	1.386e+02	1.076113
$9s\ ^2S_{1/2}$				2.261e+03	0.000	2.004870	3.436e+04	0.000	1.999107
$9p\ ^2P_{1/2}$	4.021e+01	0.000	0.666622	7.156e+02	0.000	0.660166	1.124e+04	0.000	0.665778
$9p\ ^2P_{3/2}$	7.936	5.123e+01	1.333305	1.381e+02	1.175e+03	1.345248	1.727e+03	5.070e+03	1.332622
$9d\ ^2D_{3/2}$	3.199	6.624	0.799972	6.763e+01	1.953e+02	0.798072	9.366e+02	9.349e+02	0.799305
$9d\ ^2D_{5/2}$	7.248e−01	9.051	1.199981	2.551e+01	2.477e+02	1.218808	3.835e+02	1.222e+03	1.199325
$9f\ ^2F_{5/2}$	6.664e−01	3.715	0.857122	1.705e+01	9.576e+01	0.854057	2.589e+02	4.273e+02	0.856481
$9f\ ^2F_{7/2}$	2.821e−01	4.331	1.142834	9.419	1.093e+02	1.149195	9.480e+01	3.556e+02	1.142333
$9g\ ^2G_{7/2}$	2.701e−01	2.434	0.888866	7.213	5.404e+01	0.889472	1.069e+02	2.447e+02	0.888240
$9g\ ^2G_{9/2}$	1.694e−01	2.654	1.111091	4.521	5.973e+01	1.111363	6.622e+01	2.644e+02	1.110468
$9h\ ^2H_{9/2}$	1.406e−01	1.451	0.909069	3.747	3.437e+01	0.907951	5.500e+01	1.468e+02	0.908447
$9h\ ^2H_{11/2}$	9.724e−02	1.535	1.090888	2.597	3.658e+01	1.089561	3.792e+01	1.545e+02	1.090268
$9i\ ^2I_{11/2}$	8.233e−02	9.579e−01	0.923056	2.198	2.128e+01	0.920811	3.211e+01	9.394e+01	0.922435
$9i\ ^2I_{13/2}$	6.036e−02	9.961e−01	1.076902	1.615	2.210e+01	1.078334	2.351e+01	9.743e+01	1.076283

Table S6: The present IS factors: NMS (a.u.), SMS (a.u.) and FS (GHz/fm^2) for Ar^{7+}, Kr^{25+} and Xe^{43+}.

Level	Ar^{7+}			Kr^{25+}			Xe^{43+}		
	NMS $\times 10^2$	**SMS** $\times 10^1$	**FS** $\times 10^2$	**NMS** $\times 10^3$	**SMS** $\times 10^2$	**FS** $\times 10^3$	**NMS** $\times 10^3$	**SMS** $\times 10^3$	**FS** $\times 10^4$
$3s\ ^2S_{1/2}$	5.110340	−8.726997	3.816144	2.336125	−4.592932	8.567432	5.509865	−1.077962	6.897243
$3p\ ^2P_{1/2}$	5.104289	−8.896910	3.791969	2.335552	−4.778103	8.470826	5.506562	−1.124390	6.801416
$3p\ ^2P_{3/2}$	5.104203	−8.896472	3.791927	2.335235	−4.778202	8.469533	5.503670	−1.124134	6.798417
$3d\ ^2D_{3/2}$	5.094903	−8.903392	3.792800	2.330677	−4.834532	8.467691	5.498631	−1.145729	6.798787
$3d\ ^2D_{5/2}$	5.094956	−8.904930	3.792802	2.330736	−4.838297	8.467756	5.498248	−1.147289	6.798918
$4s\ ^2S_{1/2}$	5.084731	−8.701174	3.801853	2.315861	−4.563878	8.509358	5.454912	−1.068776	6.839925
$4p\ ^2P_{1/2}$	5.082372	−8.771546	3.793224	2.315448	−4.637863	8.470086	5.453485	−1.086326	6.801384
$4p\ ^2P_{3/2}$	5.082339	−8.771683	3.793206	2.315245	−4.638906	8.469552	5.452295	−1.087485	6.800078
$4d\ ^2D_{3/2}$	5.079007	−8.772923	3.793501	2.313708	−4.633426	8.470017	5.450397	−1.087395	6.800235
$4d\ ^2D_{5/2}$	5.079063	−8.773426	3.793501	2.313662	−4.632917	8.470053	5.450211	−1.087175	6.800281
$4f\ ^2F_{5/2}$	5.078534	−8.703445	3.793885	2.313235	−4.561297	8.469557	5.449332	−1.066177	6.800958
$4f\ ^2F_{7/2}$	5.078536	−8.703457	3.793885	2.313236	−4.561288	8.469558	5.449265	−1.066190	6.800962
$5s\ ^2S_{1/2}$	5.074376	−8.700620	3.797673	2.306978	−4.559210	8.490313	5.430383	−1.067083	6.820456
$5p\ ^2P_{1/2}$	5.073176	−8.735068	3.793590	2.306686	−4.597287	8.469827	5.429644	−1.075560	6.801278
$5p\ ^2P_{3/2}$	5.073160	−8.735190	3.793581	2.306549	−4.597690	8.469556	5.429041	−1.076357	6.800604
$5d\ ^2D_{3/2}$	5.071605	−8.735161	3.793765	2.305900	−4.589670	8.470715	5.428117	−1.075103	6.800660

Table S6 – continued from previous page

Level	Ar^{7+}			Kr^{25+}			Xe^{43+}		
	NMS $\times 10^2$	SMS $\times 10^1$	FS $\times 10^2$	NMS $\times 10^3$	SMS $\times 10^2$	FS $\times 10^3$	NMS $\times 10^3$	SMS $\times 10^3$	FS $\times 10^4$
$5d\ ^2D_{5/2}$	5.071669	−8.735466	3.793764	2.305845	−4.588950	8.470741	5.428015	−1.074924	6.800682
$5f\ ^2F_{5/2}$	5.071327	−8.702966	3.793894	2.305597	−4.560773	8.469558	5.427564	−1.066071	6.801011
$5f\ ^2F_{7/2}$	5.071329	−8.702971	3.793894	2.305596	−4.560761	8.469558	5.427528	−1.066075	6.801014
$5g\ ^2G_{7/2}$	5.071473	−8.703617	3.794033	2.305681	−4.557610	8.471358	5.427507	−1.066196	6.801058
$5g\ ^2G_{9/2}$	5.071474	−8.703617	3.794033	2.305663	−4.557630	8.471358	5.427486	−1.066209	6.801058
$6s\ ^2S_{1/2}$	5.069156	−8.701325	3.796012	2.302302	−4.557951	8.482223	5.417346	−1.066562	6.812094
$6p\ ^2P_{1/2}$	5.068432	−8.720556	3.793737	2.302079	−4.581158	8.469716	5.416915	−1.071296	6.801215
$6p\ ^2P_{3/2}$	5.068423	−8.720640	3.793732	2.302007	−4.581548	8.469558	5.416564	−1.071812	6.800825
$6d\ ^2D_{3/2}$	5.067545	−8.720410	3.793882	2.301675	−4.574266	8.471000	5.416048	−1.070818	6.800836
$6d\ ^2D_{5/2}$	5.067658	−8.720710	3.793880	2.301691	−4.573658	8.471020	5.415986	−1.070703	6.800849
$6f\ ^2F_{5/2}$	5.067412	−8.702958	3.793901	2.301446	−4.560710	8.469558	5.415717	−1.066066	6.801047
$6f\ ^2F_{7/2}$	5.067412	−8.702961	3.793901	2.301446	−4.560701	8.469558	5.415695	−1.066067	6.801049
$6g\ ^2G_{7/2}$	5.067561	−8.703481	3.794033	2.301550	−4.557420	8.471360	5.415691	−1.066163	6.801059
$6g\ ^2G_{9/2}$	5.067561	−8.703475	3.794033	2.301533	−4.557428	8.471360	5.415679	−1.066170	6.801059
$6h\ ^2H_{9/2}$	5.067432	−8.703311	3.793915	2.301414	−4.560843	8.469559	5.415658	−1.066097	6.801110
$6h\ ^2H_{11/2}$	5.067433	−8.703314	3.793915	2.301409	−4.560852	8.469559	5.415650	−1.066103	6.801110
$7s\ ^2S_{1/2}$	5.066153	−8.701868	3.795223	2.299602	−4.557502	8.478210	5.409601	−1.066352	6.807924
$7p\ ^2P_{1/2}$	5.065662	−8.713632	3.793807	2.299383	−4.573407	8.469660	5.409329	−1.069261	6.801179
$7p\ ^2P_{3/2}$	5.065657	−8.713692	3.793804	2.299285	−4.573407	8.469558	5.409104	−1.069605	6.800933
$7d\ ^2D_{3/2}$	5.061495	−8.705827	3.794010	2.299156	−4.567490	8.471136	5.408789	−1.068903	6.800923
$7d\ ^2D_{5/2}$	5.065243	−8.713764	3.793939	2.299119	−4.567288	8.471143	5.408746	−1.068828	6.800930
$7f\ ^2F_{5/2}$	5.065050	−8.702998	3.793906	2.298946	−4.560707	8.469558	5.408568	−1.066069	6.801069
$7f\ ^2F_{7/2}$	5.065050	−8.703000	3.793906	2.298944	−4.560703	8.469559	5.408553	−1.066070	6.801070
$7g\ ^2G_{7/2}$	5.065202	−8.703386	3.794033	2.299047	−4.557319	8.471361	5.408561	−1.066146	6.801060
$7g\ ^2G_{9/2}$	5.065202	−8.703377	3.794033	2.299044	−4.557323	8.471361	5.408553	−1.066151	6.801060
$7h\ ^2H_{9/2}$	5.065074	−8.703283	3.793915	2.298914	−4.560817	8.469559	5.408532	−1.066094	6.801110
$7h\ ^2H_{11/2}$	5.065074	−8.703285	3.793915	2.298921	−4.560823	8.469559	5.408527	−1.066097	6.801110
$7i\ ^2I_{11/2}$	5.065209	−8.704152	3.794034	2.299044	−4.557720	8.471367	5.408553	−1.066229	6.801065
$7i\ ^2I_{13/2}$	5.065209	−8.704152	3.794034	2.299043	−4.557722	8.471367	5.408549	−1.066230	6.801065
$8s\ ^2S_{1/2}$	5.064251	−8.702211	3.794799	2.297906	−4.557301	8.475954	5.404631	−1.066251	6.805618
$8p\ ^2P_{1/2}$	5.063898	−8.709898	3.793845	2.297654	−4.569031	8.469625	5.404450	−1.068163	6.801157
$8p\ ^2P_{3/2}$	5.063897	−8.709942	3.793843	2.297585	−4.569282	8.469558	5.404293	−1.068401	6.800993
$8d\ ^2D_{3/2}$	5.061955	−8.706607	3.794001	2.297535	−4.563798	8.471214	5.404086	−1.067910	6.800971
$8d\ ^2D_{5/2}$	5.063672	−8.710047	3.793971	2.297481	−4.563656	8.471219	5.404056	−1.067859	6.800976
$8f\ ^2F_{5/2}$	5.063514	−8.703026	3.793909	2.297332	−4.560708	8.469558	5.403927	−1.066072	6.801082
$8f\ ^2F_{7/2}$	5.063515	−8.703027	3.793909	2.297315	−4.560706	8.469559	5.403912	−1.066072	6.801083
$8g\ ^2G_{7/2}$	5.063669	−8.703308	3.794033	2.297427	−4.557257	8.471363	5.403931	−1.066137	6.801062
$8g\ ^2G_{9/2}$	5.063670	−8.703298	3.794033	2.297428	−4.557259	8.471363	5.403925	−1.066140	6.801062

Table S6 – continued from previous page

Level	Ar^{7+}			Kr^{25+}			Xe^{43+}		
	NMS $\times 10^2$	**SMS** $\times 10^1$	**FS** $\times 10^2$	**NMS** $\times 10^3$	**SMS** $\times 10^2$	**FS** $\times 10^3$	**NMS** $\times 10^3$	**SMS** $\times 10^3$	**FS** $\times 10^4$
$8h\ ^2H_{9/2}$	5.063543	−8.703244	3.793915	2.297277	−4.560797	8.469559	5.403905	−1.066092	6.801110
$8h\ ^2H_{11/2}$	5.063543	−8.703245	3.793915	2.297305	−4.560801	8.469559	5.403901	−1.066094	6.801110
$8i\ ^2I_{11/2}$	5.063678	−8.703849	3.794034	2.297428	−4.557534	8.471367	5.403927	−1.066193	6.801065
$8i\ ^2I_{13/2}$	5.063678	−8.703849	3.794034	2.297431	−4.557536	8.471367	5.403924	−1.066194	6.801065
$9s\ ^2S_{1/2}$				2.296494	−4.557171	8.474377	5.401261	−1.066192	6.804243
$9p\ ^2P_{1/2}$	5.062689	−8.707647	3.793868	2.296357	−4.566267	8.469604	5.401138	−1.067512	6.801144
$9p\ ^2P_{3/2}$	5.062688	−8.707681	3.793866	2.296563	−4.566857	8.469559	5.401017	−1.067684	6.801029
$9d\ ^2D_{3/2}$	5.062682	−8.708018	3.793989	2.296447	−4.561715	8.471259	5.400874	−1.067336	6.800999
$9d\ ^2D_{5/2}$	5.062573	−8.707839	3.793991	2.296355	−4.561439	8.471268	5.400858	−1.067301	6.801003
$9f\ ^2F_{5/2}$	5.062451	−8.703007	3.793910	2.296230	−4.560695	8.469559	5.400741	−1.066070	6.801090
$9f\ ^2F_{7/2}$	5.062452	−8.703008	3.793910	2.296191	−4.560694	8.469559	5.398467	−1.066064	6.801096
$9g\ ^2G_{7/2}$	5.062616	−8.703210	3.794034	2.296325	−4.557203	8.471364	5.400754	−1.066128	6.801062
$9g\ ^2G_{9/2}$	5.062616	−8.703200	3.794034	2.296314	−4.557202	8.471364	5.400750	−1.066131	6.801062
$9h\ ^2H_{9/2}$	5.062492	−8.703174	3.793915	2.296176	−4.560768	8.469559	5.400731	−1.066087	6.801110
$9h\ ^2H_{11/2}$	5.062492	−8.703175	3.793915	2.296197	−4.560771	8.469559	5.400728	−1.066089	6.801110
$9i\ ^2I_{11/2}$	5.062629	−8.703663	3.794034	2.296324	−4.557419	8.471367	5.400754	−1.066171	6.801065
$9i\ ^2I_{13/2}$	5.062629	−8.703664	3.794034	2.296320	−4.557420	8.471367	5.400752	−1.066171	6.801065