Erratum: Calculations of the atomic structure for the low-lying states of actinium **[Phys. Rev. A **100**, 022504 (2019)]**

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Our paper contained errors in calculated values of the electric dipole transition amplitudes and lifetimes of odd states. Energy levels were not affected. This was found by performing new calculations. Corrected values are presented in Tables I and II. Numeration of the states (N_o and N_e) is taken from our original paper, N_o numerates odd states, and N_e numerates even states. Transition amplitudes which differ from previous calculations more than two times are marked with asterisks. For other amplitudes, the agreement on the level of a few percent is for large amplitudes and up to 50% is for small amplitudes. Table I presents all amplitudes needed for the calculation of lifetimes of the nine lowest odd states. Table III of our original paper presented only a fraction of these data. Odd states numbers 22 and 23 were missed in Table IV of the original paper.

TABLE I. Electric dipole transition amplitudes (reduced matrix elements in atomic units) among nine lowest odd states and all lower even states.

Odd states		N_o - N_e		Even states		Amplitude
$7s\ ^27p$	$^2P_{1/2}^o$	3	1	$7s\ ^26d$	$^2D_{3/2}$	1.7639
		8	1	$7s\ ^26d$	$^2D_{3/2}$	0.5564
		8	2	$7s\ ^26d$	$^2D_{5/2}$	2.7251*
		8	4	$7s6d^2$	$^4F_{3/2}$	0.5812
$7s7p6d$	$^4F_{3/2}^o$	8	5	$7s6d^2$	$^4F_{5/2}$	0.7357
		12	1	$7s\ ^26d$	$^2D_{3/2}$	1.4222
		12	2	$7s\ ^26d$	$^2D_{5/2}$	0.5030*
		12	4	$7s6d^2$	$^4F_{3/2}$	2.5923
		12	5	$7s6d^2$	$^4F_{5/2}$	0.4852
$7s7p6d$	$^4F_{5/2}^o$	12	10	$7s6d^2$	$^4P_{3/2}$	0.1032
		15	1	$7s\ ^26d$	$^2D_{3/2}$	1.6269
		15	2	$7s\ ^26d$	$^2D_{5/2}$	1.4982
		15	4	$7s6d^2$	$^4F_{3/2}$	1.2340
		15	5	$7s6d^2$	$^4F_{5/2}$	2.9311
		15	6	$7s6d^2$	$^4F_{7/2}$	0.0685
		15	10	$7s6d^2$	$^4P_{3/2}$	0.0316
		15	11	$7s6d^2$	$^4D_{5/2}$	0.3969
		15	13	$7s6d^2$	$^2F_{5/2}$	0.2210
		15	14	$7s6d^2$	$^2D_{3/2}$	0.4773
$7s7p6d$	$^4D_{1/2}^o$	18	1	$7s\ ^26d$	$^2D_{3/2}$	0.6240
		18	4	$7s6d^2$	$^4F_{3/2}$	3.1520
		18	9	$7s6d^2$	$^4P_{1/2}$	0.7208
		18	10	$7s6d^2$	$^4P_{3/2}$	0.1489
		18	14	$7s6d^2$	$^2D_{3/2}$	0.3500
		18	17	$7s6d^2$	$^2P_{1/2}$	0.2235
$7s7p6d$	$^4D_{3/2}^o$	21	1	$7s\ ^26d$	$^2D_{3/2}$	0.7445
		21	2	$7s\ ^26d$	$^2D_{5/2}$	0.6392
		21	4	$7s6d^2$	$^4F_{3/2}$	1.5075
		21	5	$7s6d^2$	$^4F_{5/2}$	3.9777
		21	9	$7s6d^2$	$^4P_{1/2}$	1.0853
		21	11	$7s6d^2$	$^4D_{5/2}$	0.1932
		21	13	$7s6d^2$	$^2F_{5/2}$	0.4257
		21	14	$7s6d^2$	$^2D_{3/2}$	0.0793
		21	20	$7s6d^2$	$^4D_{5/2}$	0.2433

TABLE I. (Continued.)

Odd states		N_o-N_e		Even states		Amplitude
$7s7p6d$	$^4F_{7/2}^o$	22	2	$7s\ ^26d$	$^2D_{5/2}$	1.1232
		22	5	$7s6d^2$	$^4F_{5/2}$	1.4187
		22	6	$7s6d^2$	$^4F_{7/2}$	3.8308
		22	7	$7s6d^2$	$^4F_{9/2}$	0.5212
		22	11	$7s6d^2$	$^4D_{5/2}$	0.4629
		22	13	$7s6d^2$	$^2F_{5/2}$	0.0015
		22	16	$7s6d^2$	$^4G_{7/2}$	0.0177
		22	19	$7s6d^2$	$^2G_{9/2}$	0.1330
$7s7p6d$	$^2D_{5/2}^o$	22	20	$7s6d^2$	$^4D_{5/2}$	0.2292
		23	1	$7s\ ^26d$	$^2D_{3/2}$	1.2505
		23	2	$7s\ ^26d$	$^2D_{5/2}$	2.4129
		23	4	$7s6d^2$	$^4F_{3/2}$	0.4658
		23	5	$7s6d^2$	$^4F_{5/2}$	1.7723
		23	6	$7s6d^2$	$^4F_{7/2}$	1.7920
		23	10	$7s6d^2$	$^4P_{3/2}$	1.6800
		23	11	$7s6d^2$	$^4D_{5/2}$	2.072
		23	13	$7s6d^2$	$^2F_{5/2}$	3.051
		23	14	$7s6d^2$	$^2D_{3/2}$	0.5276
		22	16	$7s6d^2$	$^4G_{7/2}$	1.0293
		23	20	$7s6d^2$	$^4D_{5/2}$	0.2203
$7s7p6d$	$^4D_{5/2}^o$	25	1	$7s\ ^26d$	$^2D_{3/2}$	0.4511
		25	2	$7s\ ^26d$	$^2D_{5/2}$	0.8195
		25	4	$7s6d^2$	$^4F_{3/2}$	0.0587
		25	5	$7s6d^2$	$^4F_{5/2}$	0.6827
		25	6	$7s6d^2$	$^4F_{7/2}$	4.8072
		25	10	$7s6d^2$	$^4P_{3/2}$	0.7703
		25	11	$7s6d^2$	$^4D_{5/2}$	0.9500
		25	13	$7s6d^2$	$^2F_{5/2}$	0.1039
		25	14	$7s6d^2$	$^2D_{3/2}$	0.6897
		25	16	$7s6d^2$	$^4G_{7/2}$	0.1281
		25	20	$7s6d^2$	$^4D_{5/2}$	0.2901
		25	24	$7s6d^2$	$^4G_{7/2}$	0.2807

TABLE II. Calculated lifetimes of the nine low-lying odd states of Ac. Where available, experimental values of the transition frequency were used. The assigned errors include the uncertainty in the calculated frequencies and $E1$ amplitudes.

N	State	Energy (cm ⁻¹)		τ (ns)
		Expt. [1]	Calc.	
3	$7s\ ^27p$	$^2P_{1/2}^o$	7565	733(70)
8	$7s\ ^27p$	$^2P_{3/2}^o$	12345	238(20)
12	$7s7p6d$	$^4F_{3/2}^o$	13713	317(30)
15	$7s7p6d$	$^4F_{5/2}^o$	14941	196(20)
18	$7s7p6d$	$^4D_{1/2}^o$	17049	139(14)
21	$7s7p6d$	$^4D_{3/2}^o$	17736	142(14)
22	$7s7p6d$	$^4F_{7/2}^o$	17612	385(40)
23	$7s7p6d$	$^4D_{5/2}^o$	17715	80(8)
25	$7s7p6d$	$^4D_{5/2}^o$	17951	157(16)
25	$7s7p6d$	$^4D_{5/2}^o$	18108	
25	$7s7p6d$	$^4D_{5/2}^o$	18747	

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[1] A. Kramida, Y. Ralchenko, J. Reader, and The NIST ASD Team (2018), NIST Atomic Spectra Database (ver. 5.5.2) [<https://physics.nist.gov/asd> (2019)].