Erratum: Quasiclassical calculations of blackbody-radiation-induced depopulation rates and effective lifetimes of Rydberg nS, nP, and nD alkali-metal atoms with $n \le 80$ [Phys. Rev. A 79, 052504 (2009)]

I. I. Beterov, I. I. Ryabtsev, D. B. Tretyakov, and V. M. Entin (Received 19 October 2009; published 11 November 2009)

DOI: 10.1103/PhysRevA.80.059902 PACS number(s): 32.10.-f, 32.70.Cs, 32.80.Ee, 99.10.Cd

We have found that zero-temperature lifetimes of Rb $nP_{3/2}$ states were calculated incorrectly, as we accidentally lost the spontaneous transitions to the lower $4D_{3/2,5/2}$ states in our computation code. This resulted in the overestimation of zero-temperature lifetimes of Rb $nP_{3/2}$ states by 13%. The effective lifetimes at 300 K were thus overestimated by less than 5%.

Below we present the corrected numerical data for effective lifetimes of Rb $nP_{3/2}$ states, which should be used instead of those reported in Table VII.

We have also calculated the new coefficients $\tau_s = 2.22135$ and $\delta = 3.00256$, which should be used for Rb $nP_{3/2}$ states in Eq. (15), instead of those reported in Table II. Zero-temperature and effective lifetimes of all other alkali-metal Rydberg states and the rates of BBR-induced depopulation rates of Rb $nP_{3/2}$ states were calculated correctly.

The above corrections do not affect the conclusions of the paper.

10	15	20	25	30	35	40	45
0.9994	4.4133	12.003	25.491	46.497	76.549	117.62	171.34
0.99702	4.2420	10.965	22.139	38.476	60.510	88.957	124.21
0.92246	3.4228	7.9749	14.784	23.926	35.431	49.403	65.844
0.79419	2.6378	5.7165	10.056	15.651	22.491	30.606	39.985
50	55	60	65	70	75	80	
239.23	321.76	422.88	543.27	684.24	848.00	1042.6	
166.53	215.72	273.09	338.39	411.67	493.32	585.48	
84.742	105.98	129.84	156.20	185.02	216.37	250.60	
50.618	62.462	75.611	90.020	105.68	122.60	140.90	
	0.9994 0.99702 0.92246 0.79419 50 239.23 166.53 84.742	0.9994 4.4133 0.99702 4.2420 0.92246 3.4228 0.79419 2.6378 50 55 239.23 321.76 166.53 215.72 84.742 105.98	0.9994 4.4133 12.003 0.99702 4.2420 10.965 0.92246 3.4228 7.9749 0.79419 2.6378 5.7165 50 55 60 239.23 321.76 422.88 166.53 215.72 273.09 84.742 105.98 129.84	0.9994 4.4133 12.003 25.491 0.99702 4.2420 10.965 22.139 0.92246 3.4228 7.9749 14.784 0.79419 2.6378 5.7165 10.056 50 55 60 65 239.23 321.76 422.88 543.27 166.53 215.72 273.09 338.39 84.742 105.98 129.84 156.20	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	0.9994 4.4133 12.003 25.491 46.497 76.549 0.99702 4.2420 10.965 22.139 38.476 60.510 0.92246 3.4228 7.9749 14.784 23.926 35.431 0.79419 2.6378 5.7165 10.056 15.651 22.491 50 55 60 65 70 75 239.23 321.76 422.88 543.27 684.24 848.00 166.53 215.72 273.09 338.39 411.67 493.32 84.742 105.98 129.84 156.20 185.02 216.37	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$

TABLE VII. Effective lifetimes τ_{eff} (μ s) of Rb $nP_{3/2}$ Rydberg states.