Table 1: Theoretical values of A and B hyperfine constants (MHz) for low-lying states in $^{25}Mg^{+}$ with correlation evaluated in the SD approximation. The nuclear moment is $\mu = -0.85545$ and the nuclear spin is $I = 5/2$. We take $Q =$ 1(b) and evaluate the ratio B/Q. The A coefficients are compared with earlier calculations [M. S. Safronova, A. Derevianko, and W. R. Johnson, Phys. Rev. A**58**, 1016 (1998)]. The slight difference with the earlier value of A for the $3s$ state arises because of different assumptions concerning the magnetic moment distribution inside the nucleus.

Term	$3s$	$3p_{1/2}$	$3p_{3/2}$	$3d_{3/2}$	$3d_{5/2}$
$A_{\rm DHF}$	-462.432	-76.962	-15.237	-1.258	-0.5390
$A_{\rm Corr}$	-134.903	-26.449	-4.051	0.118	0.6587
$A_{\rm Tot}$	-597.335	-103.411	-19.288	-1.140	0.1197
PRA**58**	-597.6	-103.4	-19.29	-1.140	0.1196
$(B/Q)_{\rm DHF}$			82.234	2.134	3.049
$(B/Q)_{\rm Corr}$			32.590	3.919	5.590
$(B/Q)_{\rm Tot}$			114.824	6.053	8.639

Isotope Shift for Mg+ ions

A	24	25	26
M (amu)	23.9850423	24.9858374	25.9825937
Abun (%)	78.9	10	11.01

Conversion Factors	
1/cm --> GHz	29.9792458
m in amu	0.000549
1/cm-> GHz-amu	0.016446012

Note: Normal mass shift (NMS) in GHz-amu = 0.016446*E(1/cm)
Energies in (1/cm) are from the NIST website
Specific mass shift (SMS) in GHz-amu is from Table V in
MS Safronova and WR Johnson, Phys. Rev. A64 052501 (2001)

Energies and NMS are given relative to the 3s ground state

State	E(1/cm)	GHz-amu NMS	GHz-amu SMS	GHz-amu Tot	GHz IS-24	GHz IS-25	GHz IS-26
3s	0	0.00	38	38.00	1.58	1.52	1.46
3p1/2	35669.31	-586.62	-324	-910.62	-37.97	-36.45	-35.05
3p3/2	35760.88	-588.12	-323	-911.12	-37.99	-36.47	-35.07
3d3/2	71491.06	-1175.74	-105	-1280.74	-53.40	-51.26	-49.29
3d5/2	71490.19	-1175.73	-106	-1281.73	-53.44	-51.30	-49.33

Below, all energy shifts are in MHz
Field shift constant (MHz/fm^2) is from Table VII in above reference.
To evaluate <r^2>^1/2, we use the formula <r^2>^1/2 = 0.836 A^(1/3)+ 0.570 (fm)

	<r^2>(fm^2)		
A=24	8.8890	d<r^2>(24-25)	-0.198
A=25	9.0871	d<r^2>(25-26)	-0.195
A=26	9.2821		

State	MHz/fm^2 FS const	MHz NMS+SMS 24-25	MHz FS 24-25	MHz Tot 24-25	MHz NMS+SMS 25-26	MHz FS 25-26	MHz Tot 25-26
3s	-116.01	63.46	22.98	86.44	58.34	22.62	80.96
3p1/2	9.800	-1520.71	-1.94	-1522.65	-1398.13	-1.91	-1400.04
3p3/2	9.811	-1521.56	-1.94	-1523.50	-1398.91	-1.91	-1400.82
3d3/2	-0.083	-2138.81	0.02	-2138.80	-1966.41	0.02	-1966.40
3d5/2	-0.083	-2140.46	0.02	-2140.44	-1967.93	0.02	-1967.91

As a check, we evaluate the IS for Na

A	22	23	24
M (amu)	21.994437	22.98976928	23.99096278
Abun	2.605 y	100%	15 h

State	E(1/cm)	GHz-amu NMS	GHz-amu SMS	GHz-amu Tot	GHz IS-22	GHz IS-23	GHz IS-24
3s	0	0.00	54	54.00	2.46	2.35	2.25
3p1/2	16956.17	-278.86	-43	-321.86	-14.63	-14.00	-13.42
3p3/2	16973.368	-279.14	-43	-322.14	-14.65	-14.01	-13.43
3d3/2	29172.889	-479.78	-3	-482.78	-21.95	-21.00	-20.12
3d5/2	29172.839	-479.78	-3	-482.78	-21.95	-21.00	-20.12

A	<r^2>(fm^2)		
22	8.4827	d<r^2>(22-23)	-0.205
23	8.6876	d<r^2>(23-24)	-0.201
24	8.8890		

State	MHz/fm^2 FS const	MHz NMS+SMS 22-23	MHz FS 22-23	MHz Tot 22-23	MHz NMS+SMS 23-24	MHz FS 23-24	MHz Tot 23-24
3s	-36.825	106.30	7.55	113.84	98.02	7.42	105.44
3p1/2	1.597	-633.56	-0.33	-633.89	-584.26	-0.32	-584.58
3p3/2	1.603	-634.12	-0.33	-634.45	-584.77	-0.32	-585.09
3d3/2	-0.062	-950.32	0.01	-950.30	-876.36	0.01	-876.35
3d5/2	-0.062	-950.31	0.01	-950.30	-876.36	0.01	-876.35

	Th (MHz)	Expt
3p1/2-3s	-747.73	-756.9
3p3/2-3s	-748.29	-757.7