

The Relative NMR Sensitivity of Nuclei in the Constant Magnetic Field

Nucleus	Resonance Frequency f_0 [MHz]	Spin Quantum Number I [$h/2\pi$]	Signal Intensity $f_0^3 I(I+1)$	Relative Sensitivity	
				Very Resistive Sample $f_0^{11/4} I(I+1)$	Very Conductive Sample $f_0^2 I(I+1)$
n1	68.506	1/2	0.3215	0.3534	0.4693
H1	100.000	1/2	1.0000	1.0000	1.0000
H2	15.351	1/1	0.0096	0.0154	0.0628
He3	76.177	1/2	0.4420	0.4732	0.5803
Li6	14.716	1/1	0.0085	0.0137	0.0577
Li7	38.862	3/2	0.2935	0.3717	0.7551
Be9	14.054	3/2	0.0139	0.0227	0.0988
B10	10.747	3/1	0.0199	0.0347	0.1848
B11	32.084	3/2	0.1651	0.2194	0.5147
C13	25.144	1/2	0.0159	0.0225	0.0632
N14	7.224	1/1	0.0010	0.0019	0.0139
N15	10.133	1/2	0.0010	0.0018	0.0103
O17	13.557	5/2	0.0291	0.0479	0.2144
F19	94.077	1/2	0.8326	0.8454	0.8850
Ne21	7.894	3/2	0.0025	0.0046	0.0312
Na23	26.452	3/2	0.0925	0.1290	0.3499
Mg25	6.119	5/2	0.0027	0.0054	0.0437
Al27	26.057	5/2	0.2064	0.2889	0.7921
Si29	19.865	1/2	0.0078	0.0117	0.0395
P31	40.481	1/2	0.0663	0.0832	0.1639
S33	7.670	3/2	0.0023	0.0043	0.0294
Cl35	9.798	3/2	0.0047	0.0084	0.0480
Cl37	8.155	3/2	0.0027	0.0051	0.0333
K39	4.667	3/2	0.0005	0.0011	0.0109
K41	2.561	3/2	0.0001	0.0002	0.0033
Ca43	6.728	7/2	0.0064	0.0126	0.0951
Sc45	24.293	7/2	0.3011	0.4288	1.2393
Ti47	7.944	5/2	0.0058	0.0110	0.0736
Ti49	5.638	7/2	0.0038	0.0077	0.0668

V50	9.970	6/1	0.0555	0.0988	0.5567
V51	26.280	7/2	0.3811	0.5323	1.4503
Cr53	5.652	3/2	0.0009	0.0019	0.0160
Mn55	24.664	5/2	0.1750	0.2484	0.7097
Fe57	3.231	1/2	0.0000	0.0001	0.0010
Co59	23.614	7/2	0.2765	0.3967	1.1710
Ni61	8.936	3/2	0.0036	0.0065	0.0399
Cu63	26.506	3/2	0.0931	0.1298	0.3513
Cu65	28.394	3/2	0.1145	0.1568	0.4031
Zn67	6.255	5/2	0.0029	0.0057	0.0456
Ga69	24.000	3/2	0.0691	0.0988	0.2880
Ga71	30.496	3/2	0.1418	0.1908	0.4650
Ge73	3.488	9/2	0.0014	0.0032	0.0402
As75	17.127	3/2	0.0251	0.0390	0.1467
Se77	19.067	1/2	0.0069	0.0105	0.0364
Br79	25.054	3/2	0.0786	0.1111	0.3139
Br81	27.006	3/2	0.0985	0.1366	0.3647
Kr83	3.847	9/2	0.0019	0.0042	0.0488
Rb85	9.655	5/2	0.0105	0.0188	0.1088
Rb87	32.720	3/2	0.1751	0.2316	0.5353
Sr87	4.334	9/2	0.0027	0.0059	0.0620
Y89	4.899	1/2	0.0001	0.0003	0.0024
Zr91	9.330	5/2	0.0095	0.0171	0.1016
Nb93	24.443	9/2	0.4819	0.6854	1.9716
Mo95	6.515	5/2	0.0032	0.0064	0.0495
Mo97	6.652	5/2	0.0034	0.0068	0.0516
Ru99	3.380	5/2	0.0005	0.0011	0.0133
Ru101	4.900	5/2	0.0014	0.0029	0.0280
Rh103	3.148	1/2	0.0000	0.0001	0.0010
Pd105	4.580	5/2	0.0011	0.0024	0.0245
Ag107	4.047	1/2	0.0001	0.0001	0.0016
Ag109	4.652	1/2	0.0001	0.0002	0.0022
Cd111	21.205	1/2	0.0095	0.0141	0.0450
Cd113	22.184	1/2	0.0109	0.0159	0.0492
In113	21.867	9/2	0.3450	0.5046	1.5779

Sn115	32.864	1/2	0.0355	0.0469	0.1080
Sn117	35.626	1/2	0.0452	0.0585	0.1269
Sn119	37.272	1/2	0.0518	0.0663	0.1389
Sb121	23.931	5/2	0.1599	0.2286	0.6681
Sb123	12.959	7/2	0.0457	0.0762	0.3527
Te123	26.210	1/2	0.0180	0.0252	0.0687
Te125	31.590	1/2	0.0315	0.0420	0.0998
I127	20.007	5/2	0.0934	0.1397	0.4670
Xe129	27.661	1/2	0.0212	0.0292	0.0765
Xe131	8.200	3/2	0.0028	0.0052	0.0336
Cs133	13.117	7/2	0.0434	0.0788	0.3613
Ba135	9.934	3/2	0.0049	0.0087	0.0493
Ba137	11.113	3/2	0.0069	0.0119	0.0618
La139	14.126	7/2	0.0592	0.0966	0.4191
Pr141	29.400	5/2	0.2965	0.4026	1.0084
Nd143	5.437	7/2	0.0034	0.0070	0.0621
Nd145	3.340	7/2	0.0008	0.0018	0.0234
Sm147	13.200	7/2	0.0483	0.0801	0.3659
Sm149	3.290	7/2	0.0007	0.0018	0.0227
Eu151	24.800	5/2	0.1779	0.2522	0.7175
Eu153	10.952	5/2	0.0153	0.0266	0.1399
Eu154	16.829	3/1	0.0763	0.1191	0.4531
Gd155	5.400	3/2	0.0008	0.0016	0.0146
Gd157	4.700	3/2	0.0005	0.0011	0.0110
Tb159	22.690	3/2	0.0584	0.0846	0.2574
Dy161	3.300	5/2	0.0004	0.0010	0.0127
Dy163	4.700	5/2	0.0012	0.0026	0.0258
Ho165	20.500	7/2	0.1809	0.2689	0.8825
Er167	2.890	7/2	0.0005	0.0012	0.0175
Tm169	18.300	1/2	0.0061	0.0094	0.0335
Yb171	17.613	1/2	0.0055	0.0084	0.0310
Yb173	4.852	5/2	0.0013	0.0028	0.0275
Lu175	11.410	7/2	0.0312	0.0537	0.2734
Hf177	3.100	7/2	0.0006	0.0015	0.0202
Hf179	1.880	9/2	0.0002	0.0006	0.0117

Ta181	11.969	7/2	0.0360	0.0612	0.3008
W183	4.161	1/2	0.0001	0.0002	0.0017
Re185	22.514	5/2	0.1331	0.1933	0.5914
Re187	22.745	5/2	0.1373	0.1988	0.6035
Os187	2.303	1/2	0.0000	0.0000	0.0005
Os189	7.759	3/2	0.0023	0.0044	0.0301
Ir191	1.719	3/2	0.0000	0.0001	0.0015
Ir193	1.872	3/2	0.0000	0.0001	0.0018
Pt195	21.498	1/2	0.0099	0.0146	0.0462
Au197	1.713	3/2	0.0000	0.0001	0.0015
Hg199	17.827	1/2	0.0057	0.0087	0.0318
Hg201	6.600	3/2	0.0014	0.0028	0.0218
Tl203	57.150	1/2	0.1867	0.2147	0.3266
Tl205	57.709	1/2	0.1922	0.2205	0.3330
Pb207	20.922	1/2	0.0092	0.0135	0.0438
Bi209	16.070	9/2	0.1369	0.2163	0.8522

References 1. N. Iriguchi, "The Power Sensitivity of Magnetic Resonance Experiments." J. Appl. Physics 73: 2956 - 2957, 1993

2. N. Iriguchi, S. Yamai and J. Hasegawa, "The NMR Sensitivity Achievable with a Slotted-Tube Resonator." MAGMA 1: 122 - 125, 1993

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