

Table II
Nuclear Moments of Conjugate Nuclei

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a) Nuclear moments of self-conjugate nuclei ($T = 0$)

Nucleus	J^π	E^* (keV)	$T_{1/2}$	μ (nm)	Method	Ref.	Q (barn)	Method	Ref.
^2D	1^+			+0.857409(1)	NMR	1	+0.00282	Rec	1
^6Li	1^+			+0.822013(8)	NMR	1	-0.008(1)	MBMR	1
^{10}B	3^+			+1.80068(5)	NMR	1	$\left(\begin{array}{l} 0.0745(150) \\ 0.08472(56) \\ 0.08035 \end{array} \right)$	EES Rec Rec	1 2 3
$^{10}\text{B}^*$	1^+	717	714(14)ps	+0.63(12)	IPAC	4	—		
^{14}N	1^+			$\left(\begin{array}{l} 0.403562(10) \\ +0.40361(2) \end{array} \right)$	Rec NMR	1 1	+0.016(7) +0.0108 $\left(\begin{array}{l} +0.007 \\ +0.015 \end{array} \right)$	MAG Rec MAG Rec MAG Rec Rec	1 1 1 5
$^{14}\text{N}^*$	3^-	5830	13(2)ps	1.5~2.55	IPAD	6	—		
$^{18}\text{F}^*$	5^+	1120	153(15)ns	$\left(\begin{array}{l} +2.86(3) \\ +2.840(65) \end{array} \right)$	DPAD DPAD	1 1	—		
$^{20}\text{Ne}^*$	2^+	1634	0.86(10)ps	—			$\left(\begin{array}{l} -0.27(11) \\ -0.24(3) \\ -0.20(6) \end{array} \right)$	REOR REOR REOR	7 8 9
^{22}Na	3^+		2.602(2)y	+1.746(3)	ABMR	1	—		
$^{22}\text{Na}^*$	1^+	583	243(2)ns	$\left(\begin{array}{l} +0.535(10) \\ +0.555(17) \end{array} \right)$	DPAC DPAD	1 1	—		
$^{24}\text{Mg}^*$	2^+	1369	1.0(2)ps	—			$\left(\begin{array}{l} -0.26(8) \\ -0.24(4) \end{array} \right)$	REOR REOR	10 11

Nucleus	J^π	E^* (keV)	$T_{1/2}$	μ (nm)	Method	Ref.	Q (barn)	Method	Ref.
$^{28}\text{Si}^*$	2^+	1779	0.52(4)ps	—			$\begin{pmatrix} 0.22(9) \\ +0.17(5) \\ +0.11(5) \end{pmatrix}$	REOR	12
								REOR	13
								REOR	14
$^{32}\text{S}^*$	2^+	2232	0.26(2)ps	—			$\begin{pmatrix} -0.20(6) \\ -0.175(50) \end{pmatrix}$	REOR	14
								REOR	15
$^{36}\text{Ar}^*$	2^+	1970		—			+0.11(6)	REOR	16
^{38}K	3^+		7.675(17)m + 1.3735(10)		ABMR	1	—		
$^{40}\text{Ca}^*$	3^-	3730	59ps	0.75(33)	IPAD	17	—		
$^{40}\text{Ca}^*$	5^-	4480	392ps	3.35(145)	IPAD	17	—		

b) Mirror pairs of isobaric doublet nuclei ($T = 1/2$)

Nucleus	J^π	$T_{1/2}$	Branching (%)	ft (sec)	μ (nm)	Method	Ref.	Q (barn)	Method	Ref.
n	$1/2^+$	10.61(16)m	100	1081(16) ^{a)}	-1.91315(5)	NMR	1			
^1H	$1/2^+$				$\begin{pmatrix} +2.792777(5) \\ 2.79276(2) \\ 2.79276(2) \end{pmatrix}$	NMR Rec LDR	1 1 1			
^3H	$1/2^+$	12.26y	100	1143(3) ^{b)}	+2.97885(1)	NMR	1			
^3He	$1/2^+$				-2.12756(1)	NMR	1			
^7Li	$3/2^-$				+3.25629(4)	NMR	1	$\begin{pmatrix} -0.043 \\ -0.03(2) \\ -0.045(5) \end{pmatrix}$	Rec ORF MBMR	18 1 1
^7Be	$3/2^-$	53.37(11)d	89.7	2.00×10^3 e)	—		1	$\begin{pmatrix} +0.049(3) \\ +0.038 \\ +0.029 \end{pmatrix}$	ABMR EES NMR	1 1 1
^9Be	$3/2^-$				-1.17744(4)	NMR	1			
^9B		$8 \times 10^{-19}\text{s}$			—		1	$\begin{pmatrix} 0.0372(74) \\ 0.04065(26) \\ 0.03856 \end{pmatrix}$	EES Rec Rec	1 2 3
^{11}B	$3/2^-$				+2.68864(7)	NMR	1			

Nucleus	J^π	$T_{1/2}$	Branching (%)	f_t (sec)	μ (nm)	Method	Ref.	Q (barn)	Method	Ref.
^{11}C	$3/2^-$	1207(8)s	100	3873(30) ^{d)}	$\begin{pmatrix} -1.027(10) \\ -0.964(1)^\dagger \end{pmatrix}$	ABMR ABMR	1 19	$\begin{pmatrix} +0.0308(6) \\ 0.03217 \end{pmatrix}$	ABMR Rec	1 3
^{13}C	$1/2^-$				+0.702384(2)	NMR	1			
^{13}N	$1/2^-$	597.6(18)s	100	4668(18) ^{d)}	-0.32212(36)	ABMR	1			
^{15}N	$1/2^-$				$\begin{pmatrix} -0.283049(7) \\ -0.28309(2) \end{pmatrix}$	Rec NMR	1 1			
^{15}O	$1/2^-$	123.6(6)s	100	4496(23) ^{d)}	0.7189(8)	ABMR	1			
^{17}O	$5/2^+$				-1.89371(9)	NMR	1	$\begin{pmatrix} -0.0265(30) \\ -0.02562 \end{pmatrix}$	ESR Rec	1 3
^{17}F	$5/2^+$	66.0(3)s	100	2344(12) ^{d)}	+4.7222(12)	IB-NMR/ β	1	—		
^{19}F	$1/2^+$				$\begin{pmatrix} +2.628353(5) \\ +2.6287(1) \end{pmatrix}$	Rec NMR	1 1			
					2.6289(9)	MBMR	1			
^{19}Ne	$1/2^+$	17.36(6)s	100	1725(8) ^{d)}	-1.886(1)	ABMR	1			
$^{19}\text{F}^*$	$5/2^+$	89.2(13)ns	($E^* = 197\text{keV}$)		$\begin{pmatrix} +3.590(18) \\ +3.69(4) \end{pmatrix}$	DPAD DPAD	1 1	0.12(2)	DPAD	20
$^{19}\text{Ne}^*$	$5/2^+$	17.7(7)ns	($E^* = 238\text{keV}$)		-0.740(7.5)	DPAD	21	—		
^{21}Ne	$3/2^+$				-0.661762(5)	MBMR	1	+0.093(10)	ABMR	1
^{21}Na	$3/2^+$	22.8(2)s	97.7(2)	4004(64) ^{d)}	$\begin{pmatrix} +2.38614(10) \\ 2.46(8) \end{pmatrix}$	ABMR IB-OP	1 22	—		
^{23}Na	$3/2^+$				+2.21752(2)	NMR	1	$\begin{pmatrix} +0.146(20) \\ +0.138(25) \\ +0.097(13) \end{pmatrix}$	ODR ODR ODR	1 1 1
^{23}Mg	$3/2^+$	11.41(5)s	90.9(5)	4793(41) ^{d)}	—			—		
^{25}Mg	$5/2^+$				-0.85512(8)	NMR	1	+0.22	ABMR	1
^{25}Al	$5/2^+$	7177(23)s	99.1(2)	3733(14) ^{d)}	—			—		
^{27}Al	$5/2^+$				+3.64141(1)	NMR	1	$\begin{pmatrix} 0.146 \\ +0.140(2) \end{pmatrix}$	EES Rec	1 19
^{27}Si	$5/2^+$	4.17(1)s	99.9(0)	4167(18) ^{d)}	—			—		
^{29}Si	$1/2^+$				-0.55525(3)	NMR	1	<10 ⁻⁴	MAG	1
^{29}P	$1/2^+$	4.149(5)s	98.4(3)	4866(41) ^{d)}	1.2349(3)	IB-NMR/ β	23			

[†] This value is not corrected for the diamagnetism.

Nucleus	J^π	$T_{1/2}$	Branching (%)	ft (sec)	μ (nm)	Method	Ref.	Q (barn)	Method	Ref.
^{31}P	$1/2^+$				+1.13166(5)	NMR	1			
^{31}S	$1/2^+$	2.61(3)s	98.9(1)	5158(83) ^{d)}	—					
^{33}S	$3/2^+$				+0.64327(8)	NMR	1	$\begin{pmatrix} -0.064(10) \\ -0.11 \end{pmatrix}$	MAG MAG	1 1
^{33}Cl	$3/2^+$	2.514(4)s	98.3(2)	5565(68) ^{d)}	—					
^{35}Cl	$3/2^+$				+0.82183(2)	NMR	1	$\begin{pmatrix} -0.080(2) \\ -0.06493(2) \end{pmatrix}$	MAG Rec	1 19
^{35}Ar	$3/2^+$	1.700(6)s	98.5(1)	5634(21) ^{d)}	+0.632(2)	ABMR	1	—		
^{37}Ar	$3/2^+$	34.8(2)d			+0.95(20)	OS	1	—		
^{37}K	$3/2^+$	1.23(2)s	98.0(4)	4613(75)	$\begin{pmatrix} +0.20320(6) \\ 0.2036(\pm 8) \end{pmatrix}$	IB-OP IB-OP	22 24	—		
$^{37}\text{Ar}^*$	$7/2^-$	4.5(2)ns	$(E^* = 1610\text{keV})$		-1.33(5)	DPAD	25	—		
$^{37}\text{K}^*$	$7/2^-$	10.5(5)ns	$(E^* = 1380\text{keV})$		+5.2(3)	DPAD	25	—		
^{39}K	$3/2^+$				+0.39141(2)	NMR	1	$\begin{pmatrix} +0.09(2) \\ 0.062(14) \\ 0.053(8) \end{pmatrix}$	ABMR RSL OLC	1 26 27
^{39}Ca	$3/2^+$	0.877(6)s	100	4366(40)	—			—		
^{41}Ca	$7/2^-$	$7.7(11) \times 10^4\text{y}$			-1.59464(2)	NMR	1	—		
^{41}Sc	$7/2^-$	0.591(5)s	100	2827(36) ^{d)}	5.43(2)	IB-NMR/ β	28	—		
^{43}Sc	$7/2^-$	3.92h			+4.62(4)	NMR	1	-0.26(6)	NMR	1
^{43}Ti	$7/2^-$	0.49(1)s	100	2950(220) ^{e)}	—			—		
$^{43}\text{Sc}^*$	$19/2^-$	0.45(2) μs	$(E^* = 3123\text{keV})$		+3.145(19)	DPAD IB-STROB	29	—		
$^{43}\text{Ti}^*$					—			—		
^{45}Ti	$7/2^-$	3.08(1)h			0.095(2)	NMR	1	0.015(15)	NMR	1
^{45}V					—			—		
^{49}Cr	$5/2^-$	42.0(2)m			0.476	ABMR	1	—		
^{49}Mn					—			—		
^{51}Mn	$5/2^-$	45.9(4)m			3.583	ABMR	1	—		
^{51}Fe					—			—		
^{55}Co	$7/2^-$	18.0(2)h			4.3(3)	LT-SNO	1	—		
^{55}Ni					—			—		

c) Mirror pairs of isobaric triplet nuclei ($T = 1$)

Nucleus	J^π	E^* (keV)	$T_{1/2}$	μ (nm)	Method	Ref.	Q (barn)	Method	Ref.
^8Li	2^+		849(4)ms	$\left\{ \begin{array}{l} +1.6532(8) \\ 1.653 \end{array} \right.$	PN-NMR/ β IB-OP	1 22	—		
^8B	2^+		774(4)ms	1.0355(3)	IB-NMR/ β	30	—		
^{12}B	1^+		20.41(6)ms	$\left\{ \begin{array}{l} +1.003(1) \\ 1.00285(^{+15}_{-14}) \end{array} \right.$	IB-NMR/ β IB-NMR/ β	31 33	0.0171(16) 0.030(8)	IB-NMR/ β IB-NMR/ β	32 33
^{12}N	1^+		10.97(4)ms	$+0.4571(5)$	IB-NMR/ β	31	—		
$^{18}\text{O}^*$	2^+	1982	2.30(14)ps	$0.52(^{+22}_{-12})$	IPAD	34	—		
$^{18}\text{Ne}^*$	2^+	1887	$0.35(^{+13}_{-6})\text{ps}$	—			—		
^{20}F	2^+		11.03(6)s	$+2.094(2)$	PN-NMR/ β	1	0.064(20)	PN-NMR/ β	35
^{20}Na	2^+		408(6)ms	$0.3694(10)$	IB-OP	22	—		
$^{22}\text{Ne}^*$	2^+	1275	5.66(18)ps	—			$\left\{ \begin{array}{l} -0.21(6) \\ -0.21(4) \\ -0.09(4) \end{array} \right.$	REOR REOR REOR	7 8 9
$^{22}\text{Mg}^*$	2^+	1247	$0.7(^{+16}_{-4})\text{ps}$	—			—		
^{24}Na	4^+		14.98(1)h	$+1.6902(5)$	ABMR	1	—		
^{24}Al	(4^+)		2.09(3)s	—			—		
$^{28}\text{Al}^*$	2^+	30.6	1.91(8)ms	4.27(48)	IPAC	36	—		
$^{28}\text{P}^*$				—			—		
^{32}P	1^+		14.31(2)d	$-0.2523(3)$	ENDOR	1	—		
^{32}Cl				—			—		
^{36}Cl	2^+		$3.07(2) \times 10^5\text{y}$	$+1.28538(6)$	NMR	1	$\left\{ \begin{array}{l} -0.017(1) \\ -0.0180(4) \end{array} \right.$	MAG Rec	1 19
^{36}K	2^+		265(25)ms	0.547(2)	IB-OP	37	—		
^{40}K	4^-		$1.276(8) \times 10^9\text{y}$	$\left\{ \begin{array}{l} -1.2981(4) \\ -1.2978(3) \end{array} \right.$	ABMR NMR	1 1	$-0.093(25)$ $\left\{ \begin{array}{l} -0.07 \\ 0.066(10) \end{array} \right.$	ODR RSL NDR	1 38 39
^{40}Sc	(4^-)		182.7(8)ms	—			—		
$^{42}\text{Ca}^*$	2^+	1524	1.0(3)ps	—			$-0.189(81)$	REOR	40
$^{42}\text{V}^*$				—			—		

Methods are shown as follows;

ABMR	Atomic beam magnetic resonance
DPAC	Differential perturbed angular correlations of radiations
DPAD	Differential perturbed angular distribution following nuclear reactions
EES	Electron elastic scattering
ENDOR	Electron-nuclear double resonance
ESR	Electron spin resonance
IPAC	Integral perturbed angular correlations of radiations
IPAD	Integral perturbed angular distribution following nuclear reactions
IB-NMR/ β	In-beam NMR detected by β -decay asymmetry
IB-OP	In-beam optical pumping
IB-STROB	In-beam stroboscopic resonance
LDR	Laser double resonance
LT-SNO	Low temperature static nuclear orientation
NDR	Nuclear double resonance
NMR	Nuclear magnetic resonance
MAG	Microwave absorption in gases
MBMR	Molecular beam magnetic resonance
ODR	Optical double resonance
OLC	Optical level crossing
ORF	Optical resonance fluorescence
OS	Optical spectroscopy
PN-NMR/ β	Polarized neutron capture NMR detected by β -decay asymmetry
Rec	Recalculations
REOR	Reorientation effect in Coulomb excitation
RSL	Resonance scattering of light

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