Table III
Magnetic Moments of the $1f_{7/2}$ Nuclei

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Experimental values of magnetic dipole moments of ground and excited states in the $lf_{7/2}$ nuclei have been compiled. Adoted nuclei are restricted to those having $20 \leqq Z \leqq 27$ with a few exceptions. The table is based on data appeared before August 1972. The following points are to be noted.

1) The compilation of V. S. Shirley, 1971 (see ref. 2) is taken as a standard reference, and when adoted values have been reported in this compilation, no original papers are quoted.
2) In principle, experimental values with the smallest errors are adopted although in many cases several different values have been reported for the same states.
3) Signs are given when they have been uniquely determined in the quoted papers or by other experiments. The absence of a sign does not necessarily imply a positive value.
4) The compiler has not attempted to make any correction such as the diamagnetic one to values reported in the original papers or in ref. 2; however, most of the adopted values have been corrected for the diamagnetism by the authors.
5) Main configurations are given for states having simple shell-model character.

Nucleus	J^π	E^* (keV)	$T_{1/2}$	μ_{exp} (nm)	Main configuration	Ref.
^{37}Ar	$7/2^-$	1610	4.6(2)ns	−1.33(5)	$\nu f_{7/2}(\nu d_{3/2}^{-2})_0(\pi d_{3/2}^{-2})_0$	1
^{39}Ar	$7/2^-$	gnd	269y	−1.3(3)	$\nu f_{7/2}(\pi d_{3/2}^{-2})_0$	2
^{37}K	$7/2^-$	1380	10.5(5)ns	+5.2(3)	$\pi f_{7/2}(\pi d_{3/2}^{-2})_0(\nu d_{3/2}^{-2})_0$	1
^{40}K	4^+	gnd	1.26×10^9y	−1.2978(3)	$\nu f_{7/2}\pi d_{3/2}^{-1}$	2
^{41}K	$7/2^-$	1294	7.3(2)ns	+4.41(5)	$\pi f_{7/2}(\pi d_{3/2}^{-2})_0(\nu f_{7/2}^2)_0$	2
^{41}Ca	$7/2^-$	gnd	8×10^4y	−1.59464(2)	$\nu f_{7/2}$	2
^{42}Ca	6^+	3190	5.30(16)ns	−2.52(18)	$\nu f_{7/2}^2$	3
			5.52(15)ns	−3.00(18)		4
^{43}Ca	$7/2^-$	gnd	stable	−1.3172	$\nu f_{7/2}^3$	2

Nucleus	J	E^* (keV)	$T_{1/2}$	μ_{exp} (nm)	Main configuration	Ref.
^{41}Sc	$7/2^-$	gnd	0.59s	+5.43(2)	$\pi f_{7/2}$	5
^{43}Sc	$7/2^-$	gnd	3.92h	+4.62(4)	$\pi f_{7/2}(\nu f^2_{7/2})_0$	2
	$19/2^-$	3123	0.45(1)μs	+3.145(19)	$\pi f_{7/2}(\nu f^2_{7/2})_6$	6
^{44}Sc	2^+	gnd	3.92h	+2.56(3)	$\pi f_{7/2}\nu f^3_{7/2}$	2
	1^+	67.8	15μs	+0.342(6)	$\pi f_{7/2}\nu f^3_{7/2}$	2
	6^+	271	2.44d	+3.88(1)	$\pi f_{7/2}\nu f^3_{7/2}$	2
^{45}Sc	$7/2^-$	gnd	stable	+4.75594(1)	$\pi f_{7/2}(\nu f^4_{7/2})_0$	2
^{46}Sc	4^+	gnd	83.9d	+3.04(2)	$\pi f_{7/2}(\nu f^{-3}_{7/2})$	2
^{47}Sc	$7/2^-$	gnd	3.43d	+5.34(2)	$\pi f_{7/2}(\nu f^{-2}_{7/2})_0$	2
	$3/2^-$	760	274(10)ns	+0.35(5)		2
^{45}Ti	$7/2^-$	gnd	3.09h	0.095(2)		2
^{47}Ti	$5/2^-$	gnd	stable	−0.7881(2)		2
^{49}Ti	$7/2^-$	gnd	stable	−1.1036(2)	$\nu f^{-1}_{7/2}(\pi f^2_{7/2})_0$	2
^{48}V	4^+	gnd	16.0d	1.63(10)		2
	2^+	305	7.09(7)ns	+0.376(34)		2
^{49}V	$7/2^-$	gnd	330d	4.46(5)	$\pi f^3_{7/2}(\nu f^{-2}_{7/2})_0$	2
^{50}V	6^+	gnd	6×10^{15}y	+3.347(1)	$\pi f^3_{7/2}\nu f^{-2}_{7/2}$	2
^{51}V	$7/2^-$	gnd	stable	+5.148(1)	$\pi f^3_{7/2}$	2
	$5/2^-$	320	0.17(8)ns	+3.85(33)	$\pi f^3_{7/2}$	7
^{49}Cr	$5/2^-$	gnd	41.9m	0.476(3)		8
^{51}Cr	$7/2^-$	gnd	27.8d	0.934(5)		9
^{53}Cr	$3/2^-$	gnd	stable	−0.47436(5)		2
^{51}Mn	$5/2^-$	gnd	45m	3.56(1)		10
^{52}Mn	6^+	gnd	5.7d	3.075(1)		2
	2^+	383	21m	0.0076 0.0077(3)		10 2
^{53}Mn	$7/2^-$	gnd	2×10^6y	5.046(7)	$\pi f^{-3}_{7/2}$	2
^{54}Mn	3^+	gnd	303d	3.302(5)	$\pi f^{-3}_{7/2}\nu p_{3/2}$	2
^{55}Mn	$5/2^-$	gnd	stable	+3.46821(1)		2
^{56}Mn	3^+	gnd	2.576h	+3.2405(2)	$\pi f^{-3}_{7/2}\nu p^{-1}_{3/2}$	2

Nucleus	J	E^* (keV)	$T_{1/2}$	μ_{exp} (nm)	Main configuration	Ref.
^{54}Fe	2^+	1409	0.97ps	+2.86(56)	$\pi f_{7/2}^{-2}$	11
	6^+	2948	1.22(2)ns	8.22(18)	$\pi f_{7/2}^{-2}$	12
^{56}Fe	2^+	847	7.8(2)ps	+1.06(32)		2
^{57}Fe	$1/2^-$	gnd	stable	+0.09061(1)		2
	$3/2^-$	14.4	97.7(2)ns	−0.1546(2)		2
	$5/2^-$	136	8.8(3)ns	+0.85(10)		2
^{58}Fe	2^+	810	6.3(14)ps	+1.08(34)		2
^{59}Fe	$3/2^-$	gnd	45d	1.1(2)		13
^{55}Co	$7/2^-$	gnd	18.2h	4.3(3)	$\pi f_{7/2}^{-1}$	2
^{56}Co	4^+	gnd	77d	3.803(7)	$\pi f_{7/2}^{-1} \nu p_{3/2}$	2
^{57}Co	$7/2^-$	gnd	270d	+4.722(17)	$\pi f_{7/2}^{-1} (\nu p_{3/2}^2)_0$	14
	$3/2^-$	1378	19(4)ps	+3.0(6)		2
^{58}Co	2^+	gnd	71.3d	+4.035(8)	$\pi f_{7/2}^{-1} \nu p_{3/2}^{-1}$	14
	4^+	54	10.2(6)μs	+4.184(8)	$\pi f_{7/2}^{-1} \nu p_{3/2}^{-1}$	2
^{59}Co	$7/2^-$	gnd	stable	+4.616(9)	$\pi f_{7/2}^{-1} (\nu p_{3/2}^4)_0$	2
	$3/2^-$	1292	0.60(5)ns	+1.64(12)		15
^{60}Co	5^+	gnd	5.26y	+3.790(8)		14

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