















This is :: relevan  m>± [-1	the originat state m?, an	in a is a rd	sf re he	nc	of e	BITA the	- f +1	orm L 1	<u>исніл</u> 4>=0.
Notice th	us in i	sa	tn	ins	in	on i	net	al	(012
(where	L=0,	2=	S	0	nd	9	= 2	.),	but
NOT in	4f lan	than	id	e	ie	ms.	W	ny ?	?
-	0							-	
-	ion	shell	S	L	J	term	$p_1$	$p_{exp}$	$p_2$
	ion Ti <sup>3+</sup> , V <sup>4+</sup>	shell 3d <sup>1</sup>	$\frac{1}{2}$	L 2	$\frac{J}{\frac{3}{2}}$	$term^{2}D_{3/2}$	$p_1$ 1.55	p <sub>exp</sub> 1.70	$\frac{p_2}{1.73}$
	$\frac{1}{\frac{1}{100}}$	shell 3d <sup>1</sup> 3d <sup>2</sup>	$\frac{1}{2}$	L 2 3	$\frac{3}{2}$	term ${}^{2}D_{3/2}$ ${}^{3}F_{2}$	$p_1$ 1.55 1.63	p <sub>exp</sub> 1.70 2.61	p <sub>2</sub> 1.73 2.83
	$\frac{\frac{1}{100}}{\frac{1}{100}}$	shell 3d <sup>1</sup> 3d <sup>2</sup> 3d <sup>3</sup>	S	L 2 3 3	J <sup>3</sup> / <sub>2</sub> 2 <sup>3</sup> / <sub>2</sub> <sup>3</sup> / <sub>2</sub>	term ${}^{2}D_{3/2}$ ${}^{3}F_{2}$ ${}^{4}F_{3/2}$	$p_1$ 1.55 1.63 0.77	p <sub>exp</sub> 1.70 2.61 3.85	p <sub>2</sub> 1.73 2.83 3.87
	$\begin{array}{c} & \\ \hline & \\ & \\$	shell 3d <sup>1</sup> 3d <sup>2</sup> 3d <sup>3</sup> 3d <sup>4</sup>	S 1 1 3 2 2	L 2 3 3 2	J 2 2 3 2 0	${ m term}^{2}D_{3/2}$ ${}^{3}F_{2}$ ${}^{4}F_{3/2}$ ${}^{5}D_{0}$	$p_1$ 1.55 1.63 0.77 0	p <sub>exp</sub> 1.70 2.61 3.85 4.82	p2           1.73           2.83           3.87           4.90
	$\begin{array}{c} & \\ \hline & \\ & \\ &$	shell 3d <sup>1</sup> 3d <sup>2</sup> 3d <sup>3</sup> 3d <sup>4</sup> 3d <sup>5</sup>	$\frac{1}{2}$ 1 $\frac{3}{2}$ 2 $\frac{5}{2}$	L 2 3 3 2 0	J 3 2 3 2 0 5 2	$\begin{array}{c} {}^{}}{}^{}}{}^{}{}^{}{}^{}{}^{}{}^{}{}^{}{}^{}{}^{}{}^{}{}^{}{}^{}{}^{}}}^{}{}^{}{}^{}{}^{}{}^{}{}^{}{}^{}{}^{}}}^{}{}^{}{}^{}{}^{}{}^{}{}^{}{}^{}{}^{}{}^{}}}^{}{}^{}}^{}{}^{}}^{}{}^{}}^{}{}^{}}^{}{}^{}}^{}{}^{}}^{}{}^{}}^{}{}^{}}^{}{}^{}}^{}{}^{}}^{}{}^{}}^{}{}^{}}^{}}^{}{}^{}^{}}^{}}^{}}^{}^{}}^{}^{}}^{}}^{}}^{}^{}}^{}^{}}^{}}^{}}^{}^{}}^{$	$p_1$ 1.55 1.63 0.77 0 5.92	$p_{exp}$ 1.70 2.61 3.85 4.82 5.82	$p_2$ 1.73 2.83 3.87 4.90 5.92
	$\begin{array}{c} & & \\ & & \\ \hline & & \\ & &$	shell 3d <sup>1</sup> 3d <sup>2</sup> 3d <sup>3</sup> 3d <sup>4</sup> 3d <sup>5</sup> 3d <sup>6</sup>	$\frac{1}{2}$ 1 $\frac{3}{2}$ 2 $\frac{5}{2}$ 2	L 2 3 2 0 2	$\frac{3}{2}$ 2 $\frac{3}{2}$ 0 $\frac{5}{2}$ 4	$\begin{array}{c} {}^{2}D_{3/2} \\ {}^{3}F_{2} \\ {}^{4}F_{3/2} \\ {}^{5}D_{0} \\ {}^{6}S_{5/2} \\ {}^{5}D_{4} \end{array}$	$p_1$ 1.55 1.63 0.77 0 5.92 6.70	$p_{exp}$ 1.70 2.61 3.85 4.82 5.82 5.82 5.36	$p_2$ 1.73 2.83 3.87 4.90 5.92 4.90
	$\begin{array}{c} \hline & & \\ \hline \hline & & \\ \hline \hline \\ \hline & & \\ \hline \hline \\ \hline & & \\ \hline \hline \\ \hline \\$	shell 3d <sup>1</sup> 3d <sup>2</sup> 3d <sup>3</sup> 3d <sup>4</sup> 3d <sup>5</sup> 3d <sup>6</sup> 3d <sup>7</sup>	$\frac{1}{2}$ 1 $\frac{3}{2}$ 2 $\frac{5}{2}$ 2 $\frac{3}{2}$	L 2 3 2 0 2 3	$\frac{J}{2}$ 2 $\frac{3}{2}$ 0 $\frac{5}{2}$ 4 $\frac{9}{2}$	$\begin{array}{c} {}^{2}D_{3/2} \\ {}^{3}F_{2} \\ {}^{4}F_{3/2} \\ {}^{5}D_{0} \\ {}^{6}S_{5/2} \\ {}^{5}D_{4} \\ {}^{4}F_{9/2} \end{array}$	$p_1$ 1.55 1.63 0.77 0 5.92 6.70 6.63	pexp 1.70 2.61 3.85 4.82 5.82 5.36 4.90	p2           1.73           2.83           3.87           4.90           5.92           4.90           3.87









































































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