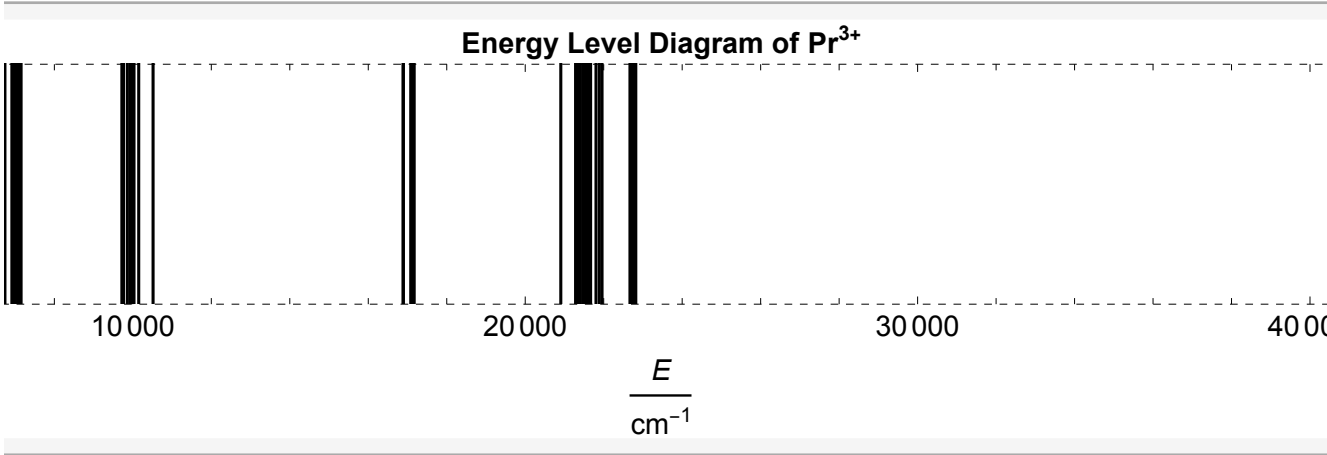


LaF₃ : Pr³⁺

Energy Diagram



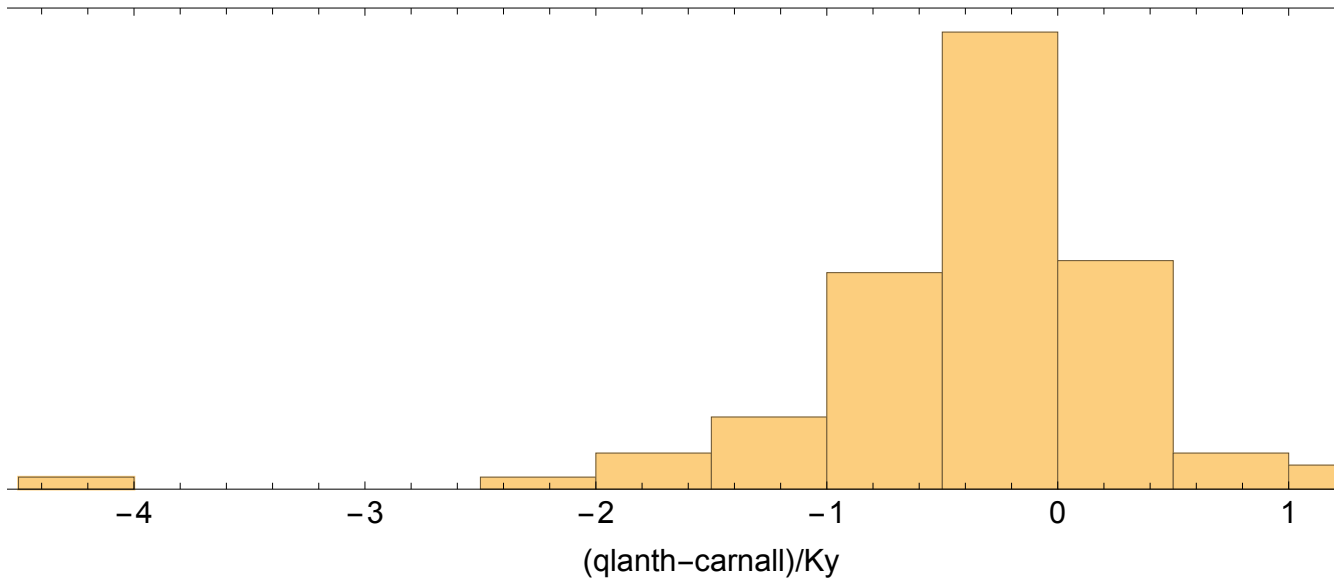
Multiplet Assignments & Energy Levels

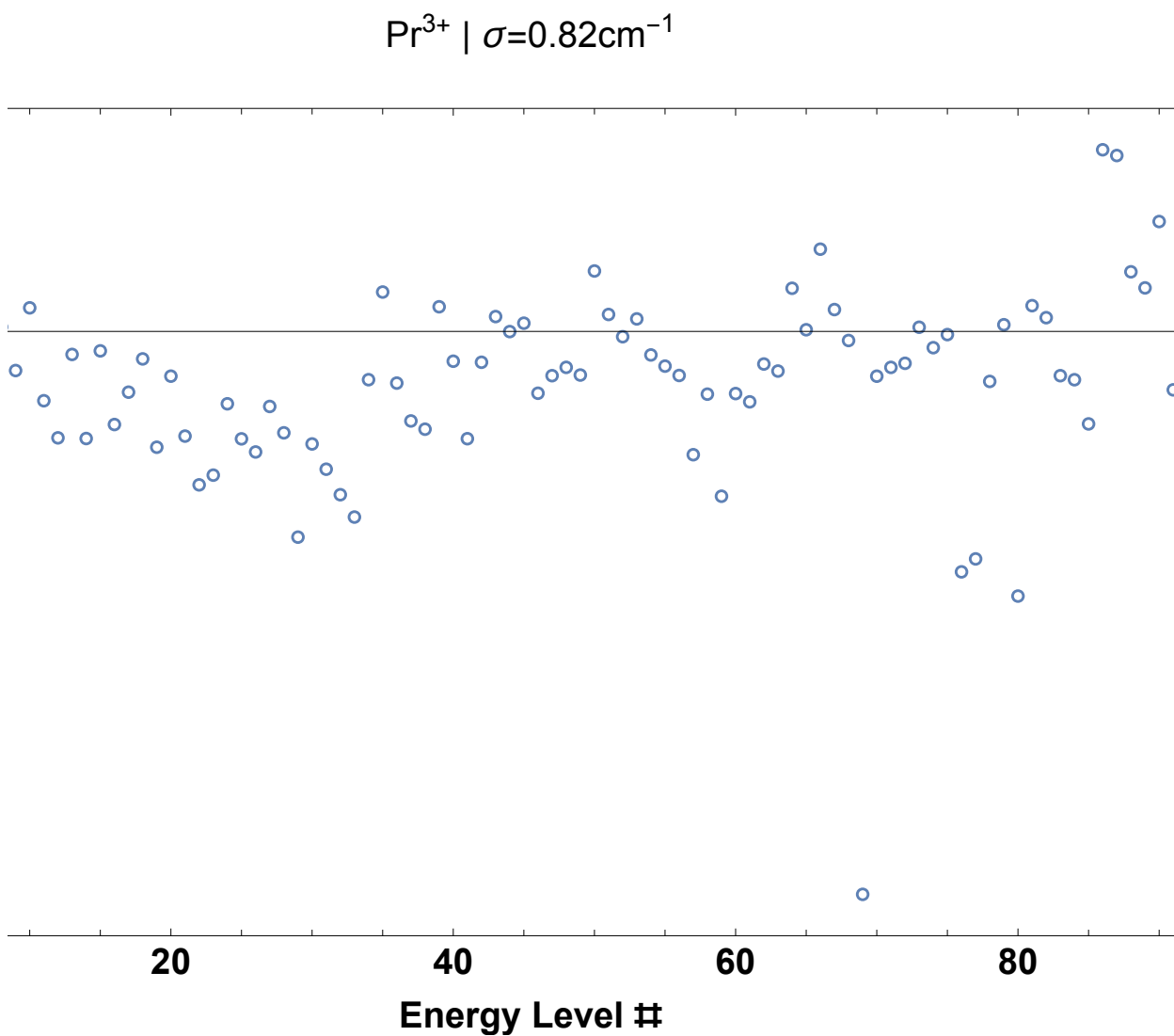
{{✓, 89}, {X, 2}}

qlanth	E/cm ⁻¹		Carnall	E/cm ⁻¹	Δ/cm ⁻¹
3H4	0	✓	3H4	0.2	-0.2
3H4	71.5015	✓	3H4	71.	0.5
3H4	94.933	✓	3H4	95.	-0.1
3H4	137.8	✓	3H4	138.	-0.2
3H4	182.51	✓	3H4	183.	-0.5
3H4	220.911	✓	3H4	221.	-0.1
3H4	333.317	✓	3H4	333.	0.3
3H4	444.034	✓	3H4	444.	0.
3H4	462.698	✓	3H4	463.	-0.3
3H5	2126.18	✓	3H5	2126.	0.2
3H5	2157.47	✓	3H5	2158.	-0.5
3H5	2190.18	✓	3H5	2191.	-0.8
3H5	2283.82	✓	3H5	2284.	-0.2
3H5	2289.17	✓	3H5	2290.	-0.8
3H5	2294.85	✓	3H5	2295.	-0.2

3H5	2317.28	✓	3H5	2318.	-0.7
3H5	2398.53	✓	3H5	2399.	-0.5
3H5	2411.79	✓	3H5	2412.	-0.2
3H5	2437.11	✓	3H5	2438.	-0.9
3H5	2539.65	✓	3H5	2540.	-0.3
3H6	4178.19	✓	3H6	4179.	-0.8
3H6	4198.82	✓	3H6	4200.	-1.2
3H6	4281.89	✓	3H6	4283.	-1.1
3H6	4320.44	✓	3H6	4321.	-0.6
3H6	4383.17	✓	3H6	4384.	-0.8
3H6	4466.07	✓	3H6	4467.	-0.9
3H6	4477.42	✓	3H6	4478.	-0.6
3H6	4495.22	✓	3H6	4496.	-0.8
3H6	4506.41	✓	3H6	4508.	-1.6
3H6	4589.13	✓	3H6	4590.	-0.9
3H6	4691.94	✓	3H6	4693.	-1.1
3H6	4710.74	✓	3H6	4712.	-1.3
3H6	4812.57	✓	3H6	4814.	-1.4
3F2	5144.63	✓	3F2	5145.	-0.4
3F2	5182.3	✓	3F2	5182.	0.3
3F2	5184.6	✓	3F2	5185.	-0.4
3F2	5269.31	✓	3F2	5270.	-0.7
3F2	5275.25	✓	3F2	5276.	-0.8
3F3	6456.19	✓	3F3	6456.	0.2
3F3	6489.77	✓	3F3	6490.	-0.2
3F3	6507.17	✓	3F3	6508.	-0.8
3F3	6578.76	✓	3F3	6579.	-0.2
3F3	6600.11	✓	3F3	6600.	0.1
3F3	6628.	✓	3F3	6628.	0.
3F3	6740.06	✓	3F3	6740.	0.1
3F4	6917.52	✓	3F4	6918.	-0.5
3F4	6935.66	✓	3F4	6936.	-0.3
3F4	6949.72	✓	3F4	6950.	-0.3
3F4	6951.66	✓	3F4	6952.	-0.3
3F4	6953.47	✓	3F4	6953.	0.5
3F4	6983.13	✓	3F4	6983.	0.1
3F4	7033.96	✓	3F4	7034.	0.
3F4	7096.1	✓	3F4	7096.	0.1
3F4	7151.82	✓	3F4	7152.	-0.2
1G4	9720.73	✓	1G4	9721.	-0.3
1G4	9761.66	✓	1G4	9762.	-0.3
1G4	9859.05	✓	1G4	9860.	-1.
1G4	9926.52	✓	1G4	9927.	-0.5
1G4	9956.73	✓	1G4	9958.	-1.3
1G4	9995.52	✓	1G4	9996.	-0.5
1G4	10 029.5	✓	1G4	10 030.	-0.5
1G4	10 149.7	✓	1G4	10 150.	-0.3
1G4	10 515.7	✓	1G4	10 516.	-0.3
1D2	16 887.3	✓	1D2	16 887.	0.3
1D2	16 895.	✓	1D2	16 895.	0.

1D2	17 082.6	✓	1D2	17 082.	0.6
1D2	17 117.2	✓	1D2	17 117.	0.2
1D2	17 169.9	✓	1D2	17 170.	-0.1
3P0	20 906.7	✓	3P0	20 911.	-4.3
1I6	21 283.7	✓	1I6	21 284.	-0.3
1I6	21 303.7	✓	1I6	21 304.	-0.3
1I6	21 339.8	✓	1I6	21 340.	-0.2
1I6	21 390.	✓	1I6	21 390.	0.
1I6	21 405.9	✓	1I6	21 406.	-0.1
1I6	21 481.	✓	1I6	21 481.	0.
3P1	21 485.1	✓	3P1	21 487.	-1.9
3P1	21 517.2	✓	3P1	21 519.	-1.8
1I6	21 569.6	✓	1I6	21 570.	-0.4
1I6	21 588.1	X	3P1	21 588.	0.1
3P1	21 590.	X	1I6	21 592.	-2.
1I6	21 637.2	✓	1I6	21 637.	0.2
1I6	21 666.1	✓	1I6	21 666.	0.1
1I6	21 803.7	✓	1I6	21 804.	-0.3
1I6	21 888.6	✓	1I6	21 889.	-0.4
1I6	21 957.3	✓	1I6	21 958.	-0.7
3P2	22 669.4	✓	3P2	22 668.	1.4
3P2	22 705.4	✓	3P2	22 704.	1.4
3P2	22 738.5	✓	3P2	22 738.	0.5
3P2	22 787.3	✓	3P2	22 787.	0.3
3P2	22 817.8	✓	3P2	22 817.	0.8
1S0	46 964.5	✓	1S0	46 965.	-0.5





Truncated Eigenstates

These are the resultant eigenstates which add up to at least a total probability of 0.9.

Energy / cm^{-1}	ψ
0	$-0.14 \left {}^1\text{G}_{(4,0)} \right\rangle - 0.31 \left {}^3\text{H}_{(4,-4)} \right\rangle - 0.88 \left {}^3\text{H}_{(4,0)} \right\rangle - 0.31 \left {}^3\text{H}_{(4,4)} \right\rangle$

72	$0.11 \left {}^1G_{\{4,1\}} \right\rangle + 0.34 \left {}^3H_{\{4,-3\}} \right\rangle - 0.61 \left {}^3H_{\{4,-1\}} \right\rangle + 0.61 \left {}^3H_{\{4,1\}} \right\rangle - 0.34 \left {}^3H_{\{4,3\}} \right\rangle$
95	$-0.09 \left {}^1G_{\{4,2\}} \right\rangle - 0.41 \left {}^3H_{\{4,-4\}} \right\rangle - 0.52 \left {}^3H_{\{4,-2\}} \right\rangle +$ $0.32 \left {}^3H_{\{4,0\}} \right\rangle - 0.52 \left {}^3H_{\{4,2\}} \right\rangle - 0.41 \left {}^3H_{\{4,4\}} \right\rangle$
138	$-0.68 \left {}^3H_{\{4,-1\}} \right\rangle - 0.68 \left {}^3H_{\{4,1\}} \right\rangle + 0.16 \left {}^3H_{\{4,3\}} \right\rangle$
183	$-0.68 \left {}^3H_{\{4,-3\}} \right\rangle - 0.15 \left {}^3H_{\{4,1\}} \right\rangle - 0.68 \left {}^3H_{\{4,3\}} \right\rangle$
221	$-0.68 \left {}^3H_{\{4,-4\}} \right\rangle + 0.68 \left {}^3H_{\{4,4\}} \right\rangle - 0.07 \left {}^3H_{\{5,2\}} \right\rangle$
333	$0.68 \left {}^3H_{\{4,-2\}} \right\rangle - 0.68 \left {}^3H_{\{4,2\}} \right\rangle + 0.09 \left {}^3H_{\{5,4\}} \right\rangle$
444	$0.11 \left {}^1G_{\{4,3\}} \right\rangle - 0.6 \left {}^3H_{\{4,-3\}} \right\rangle - 0.33 \left {}^3H_{\{4,-1\}} \right\rangle + 0.33 \left {}^3H_{\{4,1\}} \right\rangle + 0.6 \left {}^3H_{\{4,3\}} \right\rangle$
463	$-0.09 \left {}^1G_{\{4,4\}} \right\rangle - 0.47 \left {}^3H_{\{4,-4\}} \right\rangle + 0.46 \left {}^3H_{\{4,-2\}} \right\rangle +$ $0.3 \left {}^3H_{\{4,0\}} \right\rangle + 0.46 \left {}^3H_{\{4,2\}} \right\rangle - 0.47 \left {}^3H_{\{4,4\}} \right\rangle$
2126	$0.25 \left {}^3H_{\{5,-4\}} \right\rangle + 0.89 \left {}^3H_{\{5,0\}} \right\rangle - 0.2 \left {}^3H_{\{5,2\}} \right\rangle + 0.25 \left {}^3H_{\{5,4\}} \right\rangle$
2157	$-0.31 \left {}^3H_{\{5,-3\}} \right\rangle + 0.61 \left {}^3H_{\{5,-1\}} \right\rangle - 0.61 \left {}^3H_{\{5,1\}} \right\rangle + 0.31 \left {}^3H_{\{5,3\}} \right\rangle + 0.17 \left {}^3H_{\{5,5\}} \right\rangle$
2190	$0.42 \left {}^3H_{\{5,-5\}} \right\rangle + 0.53 \left {}^3H_{\{5,-1\}} \right\rangle + 0.53 \left {}^3H_{\{5,1\}} \right\rangle + 0.19 \left {}^3H_{\{5,3\}} \right\rangle + 0.42 \left {}^3H_{\{5,5\}} \right\rangle$
2284	$-0.49 \left {}^3H_{\{5,-4\}} \right\rangle + 0.5 \left {}^3H_{\{5,-2\}} \right\rangle - 0.5 \left {}^3H_{\{5,2\}} \right\rangle + 0.49 \left {}^3H_{\{5,4\}} \right\rangle$
2289	$-0.24 \left {}^3H_{\{5,-5\}} \right\rangle - 0.53 \left {}^3H_{\{5,-3\}} \right\rangle + 0.39 \left {}^3H_{\{5,-1\}} \right\rangle +$ $0.39 \left {}^3H_{\{5,1\}} \right\rangle - 0.53 \left {}^3H_{\{5,3\}} \right\rangle - 0.24 \left {}^3H_{\{5,5\}} \right\rangle$
2295	$0.29 \left {}^3H_{\{5,-4\}} \right\rangle + 0.63 \left {}^3H_{\{5,-2\}} \right\rangle + 0.12 \left {}^3H_{\{5,0\}} \right\rangle + 0.63 \left {}^3H_{\{5,2\}} \right\rangle + 0.29 \left {}^3H_{\{5,4\}} \right\rangle$
2317	$0.62 \left {}^3H_{\{5,-5\}} \right\rangle + 0.19 \left {}^3H_{\{5,-3\}} \right\rangle + 0.27 \left {}^3H_{\{5,-1\}} \right\rangle -$ $0.27 \left {}^3H_{\{5,1\}} \right\rangle - 0.19 \left {}^3H_{\{5,3\}} \right\rangle - 0.62 \left {}^3H_{\{5,5\}} \right\rangle$
2399	$0.1 \left {}^3F_{\{2,0\}} \right\rangle + 0.5 \left {}^3H_{\{5,-4\}} \right\rangle + 0.49 \left {}^3H_{\{5,-2\}} \right\rangle - 0.49 \left {}^3H_{\{5,2\}} \right\rangle - 0.5 \left {}^3H_{\{5,4\}} \right\rangle$

2412	$-0.08 \left {}^3F_{\{2,1\}} \right\rangle + 0.5 \left {}^3H_{\{5,-5\}} \right\rangle - 0.41 \left {}^3H_{\{5,-3\}} \right\rangle -$ $0.25 \left {}^3H_{\{5,-1\}} \right\rangle - 0.25 \left {}^3H_{\{5,1\}} \right\rangle - 0.41 \left {}^3H_{\{5,3\}} \right\rangle + 0.5 \left {}^3H_{\{5,5\}} \right\rangle$
2437	$0.59 \left {}^3H_{\{5,-4\}} \right\rangle - 0.22 \left {}^3H_{\{5,-2\}} \right\rangle - 0.42 \left {}^3H_{\{5,0\}} \right\rangle - 0.22 \left {}^3H_{\{5,2\}} \right\rangle + 0.59 \left {}^3H_{\{5,4\}} \right\rangle$
2540	$-0.29 \left {}^3H_{\{5,-5\}} \right\rangle + 0.6 \left {}^3H_{\{5,-3\}} \right\rangle + 0.23 \left {}^3H_{\{5,-1\}} \right\rangle -$ $0.23 \left {}^3H_{\{5,1\}} \right\rangle - 0.6 \left {}^3H_{\{5,3\}} \right\rangle + 0.29 \left {}^3H_{\{5,5\}} \right\rangle$
4178	$0.12 \left {}^3F_{\{2,2\}} \right\rangle + 0.29 \left {}^3H_{\{6,-6\}} \right\rangle + 0.3 \left {}^3H_{\{6,-4\}} \right\rangle +$ $0.78 \left {}^3H_{\{6,0\}} \right\rangle + 0.3 \left {}^3H_{\{6,4\}} \right\rangle + 0.29 \left {}^3H_{\{6,6\}} \right\rangle$
4199	$-0.39 \left {}^3H_{\{6,-5\}} \right\rangle - 0.57 \left {}^3H_{\{6,-1\}} \right\rangle -$ $0.57 \left {}^3H_{\{6,1\}} \right\rangle + 0.12 \left {}^3H_{\{6,3\}} \right\rangle - 0.39 \left {}^3H_{\{6,5\}} \right\rangle$
4282	$0.07 \left {}^3F_{\{2,2\}} \right\rangle - 0.29 \left {}^3H_{\{6,-6\}} \right\rangle - 0.5 \left {}^3H_{\{6,-4\}} \right\rangle +$ $0.39 \left {}^3H_{\{6,-2\}} \right\rangle - 0.39 \left {}^3H_{\{6,2\}} \right\rangle + 0.5 \left {}^3H_{\{6,4\}} \right\rangle + 0.29 \left {}^3H_{\{6,6\}} \right\rangle$
4320	$-0.25 \left {}^3H_{\{6,-3\}} \right\rangle + 0.65 \left {}^3H_{\{6,-1\}} \right\rangle - 0.65 \left {}^3H_{\{6,1\}} \right\rangle + 0.25 \left {}^3H_{\{6,3\}} \right\rangle$
4383	$0.38 \left {}^3H_{\{6,-6\}} \right\rangle + 0.51 \left {}^3H_{\{6,-2\}} \right\rangle - 0.35 \left {}^3H_{\{6,0\}} \right\rangle +$ $0.51 \left {}^3H_{\{6,2\}} \right\rangle + 0.17 \left {}^3H_{\{6,4\}} \right\rangle + 0.38 \left {}^3H_{\{6,6\}} \right\rangle$
4466	$0.13 \left {}^3F_{\{2,1\}} \right\rangle + 0.68 \left {}^3H_{\{6,-5\}} \right\rangle - 0.68 \left {}^3H_{\{6,5\}} \right\rangle$
4477	$-0.03 \left {}^1I_{\{6,6\}} \right\rangle - 0.55 \left {}^3H_{\{6,-6\}} \right\rangle -$ $0.43 \left {}^3H_{\{6,-2\}} \right\rangle + 0.43 \left {}^3H_{\{6,2\}} \right\rangle + 0.55 \left {}^3H_{\{6,6\}} \right\rangle$
4495	$-0.17 \left {}^3F_{\{2,0\}} \right\rangle - 0.29 \left {}^3H_{\{6,-6\}} \right\rangle - 0.26 \left {}^3H_{\{6,-4\}} \right\rangle + 0.46 \left {}^3H_{\{6,-2\}} \right\rangle +$ $0.48 \left {}^3H_{\{6,0\}} \right\rangle + 0.46 \left {}^3H_{\{6,2\}} \right\rangle - 0.26 \left {}^3H_{\{6,4\}} \right\rangle - 0.29 \left {}^3H_{\{6,6\}} \right\rangle$
4506	$-0.68 \left {}^3H_{\{6,-3\}} \right\rangle - 0.68 \left {}^3H_{\{6,3\}} \right\rangle - 0.14 \left {}^3H_{\{6,5\}} \right\rangle$
4589	$0.56 \left {}^3H_{\{6,-5\}} \right\rangle - 0.4 \left {}^3H_{\{6,-1\}} \right\rangle - 0.4 \left {}^3H_{\{6,1\}} \right\rangle - 0.09 \left {}^3H_{\{6,3\}} \right\rangle + 0.56 \left {}^3H_{\{6,5\}} \right\rangle$

4692	$-0.25 \left {}^3F_{(2,0)} \right\rangle - 0.39 \left {}^3H_{(6,-6)} \right\rangle + 0.53 \left {}^3H_{(6,-4)} \right\rangle +$ $0.09 \left {}^3H_{(6,2)} \right\rangle + 0.53 \left {}^3H_{(6,4)} \right\rangle - 0.39 \left {}^3H_{(6,6)} \right\rangle$
4711	$-0.19 \left {}^3F_{(2,-1)} \right\rangle + 0.19 \left {}^3F_{(2,1)} \right\rangle + 0.62 \left {}^3H_{(6,-3)} \right\rangle +$ $0.24 \left {}^3H_{(6,-1)} \right\rangle - 0.24 \left {}^3H_{(6,1)} \right\rangle - 0.62 \left {}^3H_{(6,3)} \right\rangle$
4813	$0.17 \left {}^3F_{(3,0)} \right\rangle - 0.32 \left {}^3H_{(6,-6)} \right\rangle + 0.48 \left {}^3H_{(6,-4)} \right\rangle +$ $0.37 \left {}^3H_{(6,-2)} \right\rangle - 0.37 \left {}^3H_{(6,2)} \right\rangle - 0.48 \left {}^3H_{(6,4)} \right\rangle + 0.32 \left {}^3H_{(6,6)} \right\rangle$
5145	$-0.6 \left {}^3F_{(2,-2)} \right\rangle - 0.44 \left {}^3F_{(2,0)} \right\rangle - 0.6 \left {}^3F_{(2,2)} \right\rangle + 0.14 \left {}^3H_{(6,0)} \right\rangle$
5182	$-0.68 \left {}^3F_{(2,-2)} \right\rangle + 0.68 \left {}^3F_{(2,2)} \right\rangle + 0.12 \left {}^3H_{(6,2)} \right\rangle$
5185	$0.11 \left {}^1D_{(2,1)} \right\rangle + 0.69 \left {}^3F_{(2,-1)} \right\rangle + 0.69 \left {}^3F_{(2,1)} \right\rangle$
5269	$0.13 \left {}^1D_{(2,0)} \right\rangle - 0.3 \left {}^3F_{(2,-2)} \right\rangle + 0.82 \left {}^3F_{(2,0)} \right\rangle -$ $0.3 \left {}^3F_{(2,2)} \right\rangle - 0.18 \left {}^3H_{(6,-6)} \right\rangle - 0.18 \left {}^3H_{(6,6)} \right\rangle$
5275	$-0.65 \left {}^3F_{(2,-1)} \right\rangle + 0.65 \left {}^3F_{(2,1)} \right\rangle - 0.14 \left {}^3H_{(6,-5)} \right\rangle -$ $0.17 \left {}^3H_{(6,-3)} \right\rangle + 0.17 \left {}^3H_{(6,3)} \right\rangle + 0.14 \left {}^3H_{(6,5)} \right\rangle$
6456	$0.68 \left {}^3F_{(3,-3)} \right\rangle - 0.68 \left {}^3F_{(3,3)} \right\rangle + 0.08 \left {}^3F_{(4,3)} \right\rangle$
6490	$-0.56 \left {}^3F_{(3,-2)} \right\rangle - 0.56 \left {}^3F_{(3,0)} \right\rangle - 0.56 \left {}^3F_{(3,2)} \right\rangle - 0.11 \left {}^3F_{(4,4)} \right\rangle$
6507	$0.69 \left {}^3F_{(3,-1)} \right\rangle - 0.69 \left {}^3F_{(3,1)} \right\rangle - 0.1 \left {}^3H_{(6,5)} \right\rangle$
6579	$-0.21 \left {}^3F_{(3,-3)} \right\rangle + 0.66 \left {}^3F_{(3,-1)} \right\rangle + 0.66 \left {}^3F_{(3,1)} \right\rangle - 0.21 \left {}^3F_{(3,3)} \right\rangle$
6600	$-0.7 \left {}^3F_{(3,-2)} \right\rangle + 0.7 \left {}^3F_{(3,2)} \right\rangle$
6628	$0.66 \left {}^3F_{(3,-3)} \right\rangle + 0.22 \left {}^3F_{(3,-1)} \right\rangle + 0.22 \left {}^3F_{(3,1)} \right\rangle + 0.66 \left {}^3F_{(3,3)} \right\rangle$
6740	$-0.39 \left {}^3F_{(3,-2)} \right\rangle + 0.8 \left {}^3F_{(3,0)} \right\rangle - 0.39 \left {}^3F_{(3,2)} \right\rangle - 0.08 \left {}^3H_{(6,6)} \right\rangle$

6918	$ \begin{aligned} & -0.27 \left {}^1G_{\{4, -4\}} \right\rangle - 0.27 \left {}^1G_{\{4, -2\}} \right\rangle - 0.14 \left {}^1G_{\{4, 0\}} \right\rangle - \\ & 0.27 \left {}^1G_{\{4, 2\}} \right\rangle - 0.27 \left {}^1G_{\{4, 4\}} \right\rangle + 0.4 \left {}^3F_{\{4, -4\}} \right\rangle + \\ & 0.38 \left {}^3F_{\{4, -2\}} \right\rangle + 0.21 \left {}^3F_{\{4, 0\}} \right\rangle + 0.38 \left {}^3F_{\{4, 2\}} \right\rangle + 0.4 \left {}^3F_{\{4, 4\}} \right\rangle \end{aligned} $
6936	$ \begin{aligned} & -0.39 \left {}^1G_{\{4, -4\}} \right\rangle - 0.14 \left {}^1G_{\{4, -2\}} \right\rangle + 0.14 \left {}^1G_{\{4, 2\}} \right\rangle + 0.39 \left {}^1G_{\{4, 4\}} \right\rangle + \\ & 0.51 \left {}^3F_{\{4, -4\}} \right\rangle + 0.19 \left {}^3F_{\{4, -2\}} \right\rangle - 0.19 \left {}^3F_{\{4, 2\}} \right\rangle - 0.51 \left {}^3F_{\{4, 4\}} \right\rangle \end{aligned} $
6950	$ \begin{aligned} & -0.23 \left {}^1G_{\{4, -3\}} \right\rangle - 0.33 \left {}^1G_{\{4, -1\}} \right\rangle - 0.33 \left {}^1G_{\{4, 1\}} \right\rangle - 0.23 \left {}^1G_{\{4, 3\}} \right\rangle + \\ & 0.13 \left {}^3F_{\{3, 3\}} \right\rangle + 0.32 \left {}^3F_{\{4, -3\}} \right\rangle + 0.46 \left {}^3F_{\{4, -1\}} \right\rangle + 0.46 \left {}^3F_{\{4, 1\}} \right\rangle + 0.32 \left {}^3F_{\{4, 3\}} \right\rangle \end{aligned} $
6952	$ \begin{aligned} & -0.43 \left {}^1G_{\{4, -1\}} \right\rangle + 0.43 \left {}^1G_{\{4, 1\}} \right\rangle + \\ & 0.52 \left {}^3F_{\{4, -1\}} \right\rangle - 0.52 \left {}^3F_{\{4, 1\}} \right\rangle + 0.08 \left {}^3H_{\{6, 3\}} \right\rangle \end{aligned} $
6953	$ \begin{aligned} & -0.24 \left {}^1G_{\{4, -4\}} \right\rangle + 0.33 \left {}^1G_{\{4, -2\}} \right\rangle - 0.25 \left {}^1G_{\{4, 0\}} \right\rangle + \\ & 0.33 \left {}^1G_{\{4, 2\}} \right\rangle - 0.24 \left {}^1G_{\{4, 4\}} \right\rangle + 0.28 \left {}^3F_{\{4, -4\}} \right\rangle - 0.37 \left {}^3F_{\{4, -2\}} \right\rangle + \\ & 0.32 \left {}^3F_{\{4, 0\}} \right\rangle - 0.37 \left {}^3F_{\{4, 2\}} \right\rangle + 0.28 \left {}^3F_{\{4, 4\}} \right\rangle + 0.1 \left {}^3H_{\{6, 4\}} \right\rangle \end{aligned} $
6983	$ \begin{aligned} & 0.2 \left {}^1G_{\{4, -4\}} \right\rangle - 0.5 \left {}^1G_{\{4, 0\}} \right\rangle + 0.2 \left {}^1G_{\{4, 4\}} \right\rangle - \\ & 0.26 \left {}^3F_{\{4, -4\}} \right\rangle + 0.7 \left {}^3F_{\{4, 0\}} \right\rangle - 0.26 \left {}^3F_{\{4, 4\}} \right\rangle \end{aligned} $
7034	$ \begin{aligned} & -0.41 \left {}^1G_{\{4, -3\}} \right\rangle + 0.41 \left {}^1G_{\{4, 3\}} \right\rangle + \\ & 0.57 \left {}^3F_{\{4, -3\}} \right\rangle - 0.57 \left {}^3F_{\{4, 3\}} \right\rangle - 0.09 \left {}^3H_{\{4, 3\}} \right\rangle \end{aligned} $
7096	$ \begin{aligned} & 0.38 \left {}^1G_{\{4, -2\}} \right\rangle - 0.38 \left {}^1G_{\{4, 2\}} \right\rangle + 0.14 \left {}^1G_{\{4, 4\}} \right\rangle + \\ & 0.2 \left {}^3F_{\{4, -4\}} \right\rangle - 0.54 \left {}^3F_{\{4, -2\}} \right\rangle + 0.54 \left {}^3F_{\{4, 2\}} \right\rangle - 0.2 \left {}^3F_{\{4, 4\}} \right\rangle \end{aligned} $
7152	$ \begin{aligned} & 0.29 \left {}^1G_{\{4, -3\}} \right\rangle - 0.21 \left {}^1G_{\{4, -1\}} \right\rangle - 0.21 \left {}^1G_{\{4, 1\}} \right\rangle + 0.29 \left {}^1G_{\{4, 3\}} \right\rangle - \\ & 0.49 \left {}^3F_{\{4, -3\}} \right\rangle + 0.34 \left {}^3F_{\{4, -1\}} \right\rangle + 0.34 \left {}^3F_{\{4, 1\}} \right\rangle - 0.49 \left {}^3F_{\{4, 3\}} \right\rangle \end{aligned} $
9721	$ \begin{aligned} & 0.28 \left {}^1G_{\{4, -4\}} \right\rangle - 0.44 \left {}^1G_{\{4, -2\}} \right\rangle - 0.44 \left {}^1G_{\{4, 2\}} \right\rangle + 0.28 \left {}^1G_{\{4, 4\}} \right\rangle + \\ & 0.25 \left {}^3F_{\{4, -4\}} \right\rangle - 0.39 \left {}^3F_{\{4, -2\}} \right\rangle - 0.39 \left {}^3F_{\{4, 2\}} \right\rangle + 0.25 \left {}^3F_{\{4, 4\}} \right\rangle \end{aligned} $
9762	$ \begin{aligned} & -0.52 \left {}^1G_{\{4, -1\}} \right\rangle + 0.52 \left {}^1G_{\{4, 1\}} \right\rangle + \\ & 0.12 \left {}^1G_{\{4, 3\}} \right\rangle - 0.44 \left {}^3F_{\{4, -1\}} \right\rangle + 0.44 \left {}^3F_{\{4, 1\}} \right\rangle \end{aligned} $

9859	$0.51 \left {}^1G_{\{4, -4\}} \right\rangle + 0.21 \left {}^1G_{\{4, -2\}} \right\rangle - 0.21 \left {}^1G_{\{4, 2\}} \right\rangle -$ $0.51 \left {}^1G_{\{4, 4\}} \right\rangle + 0.39 \left {}^3F_{\{4, -4\}} \right\rangle - 0.17 \left {}^3F_{\{4, 2\}} \right\rangle - 0.39 \left {}^3F_{\{4, 4\}} \right\rangle$
9927	$-0.32 \left {}^1G_{\{4, -3\}} \right\rangle - 0.46 \left {}^1G_{\{4, -1\}} \right\rangle - 0.46 \left {}^1G_{\{4, 1\}} \right\rangle - 0.32 \left {}^1G_{\{4, 3\}} \right\rangle -$ $0.24 \left {}^3F_{\{4, -3\}} \right\rangle - 0.35 \left {}^3F_{\{4, -1\}} \right\rangle - 0.35 \left {}^3F_{\{4, 1\}} \right\rangle - 0.24 \left {}^3F_{\{4, 3\}} \right\rangle$
9957	$0.41 \left {}^1G_{\{4, -4\}} \right\rangle + 0.21 \left {}^1G_{\{4, -2\}} \right\rangle - 0.46 \left {}^1G_{\{4, 0\}} \right\rangle + 0.21 \left {}^1G_{\{4, 2\}} \right\rangle +$ $0.41 \left {}^1G_{\{4, 4\}} \right\rangle + 0.3 \left {}^3F_{\{4, -4\}} \right\rangle - 0.35 \left {}^3F_{\{4, 0\}} \right\rangle + 0.15 \left {}^3F_{\{4, 2\}} \right\rangle + 0.3 \left {}^3F_{\{4, 4\}} \right\rangle$
9996	$0.26 \left {}^1G_{\{4, -4\}} \right\rangle + 0.23 \left {}^1G_{\{4, -2\}} \right\rangle + 0.64 \left {}^1G_{\{4, 0\}} \right\rangle + 0.23 \left {}^1G_{\{4, 2\}} \right\rangle +$ $0.26 \left {}^1G_{\{4, 4\}} \right\rangle + 0.16 \left {}^3F_{\{4, -2\}} \right\rangle + 0.47 \left {}^3F_{\{4, 0\}} \right\rangle + 0.16 \left {}^3F_{\{4, 2\}} \right\rangle + 0.18 \left {}^3F_{\{4, 4\}} \right\rangle$
10 029	$0.55 \left {}^1G_{\{4, -3\}} \right\rangle + 0.13 \left {}^1G_{\{4, 1\}} \right\rangle - 0.55 \left {}^1G_{\{4, 3\}} \right\rangle + 0.4 \left {}^3F_{\{4, -3\}} \right\rangle - 0.4 \left {}^3F_{\{4, 3\}} \right\rangle$
10 150	$0.22 \left {}^1G_{\{4, -4\}} \right\rangle - 0.53 \left {}^1G_{\{4, -2\}} \right\rangle + 0.53 \left {}^1G_{\{4, 2\}} \right\rangle -$ $0.22 \left {}^1G_{\{4, 4\}} \right\rangle - 0.38 \left {}^3F_{\{4, -2\}} \right\rangle + 0.38 \left {}^3F_{\{4, 2\}} \right\rangle - 0.15 \left {}^3F_{\{4, 4\}} \right\rangle$
10 516	$-0.5 \left {}^1G_{\{4, -3\}} \right\rangle + 0.34 \left {}^1G_{\{4, -1\}} \right\rangle + 0.34 \left {}^1G_{\{4, 1\}} \right\rangle - 0.5 \left {}^1G_{\{4, 3\}} \right\rangle -$ $0.3 \left {}^3F_{\{4, -3\}} \right\rangle + 0.2 \left {}^3F_{\{4, -1\}} \right\rangle + 0.2 \left {}^3F_{\{4, 1\}} \right\rangle - 0.3 \left {}^3F_{\{4, 3\}} \right\rangle$
16 887	$0.67 \left {}^1D_{\{2, -2\}} \right\rangle - 0.67 \left {}^1D_{\{2, 2\}} \right\rangle - 0.2 \left {}^3P_{\{2, -2\}} \right\rangle + 0.2 \left {}^3P_{\{2, 2\}} \right\rangle$
16 895	$-0.67 \left {}^1D_{\{2, -1\}} \right\rangle - 0.67 \left {}^1D_{\{2, 1\}} \right\rangle + 0.2 \left {}^3P_{\{2, -1\}} \right\rangle + 0.2 \left {}^3P_{\{2, 1\}} \right\rangle$
17 083	$0.66 \left {}^1D_{\{2, -1\}} \right\rangle - 0.66 \left {}^1D_{\{2, 1\}} \right\rangle - 0.21 \left {}^3P_{\{2, -1\}} \right\rangle + 0.21 \left {}^3P_{\{2, 1\}} \right\rangle$
17 117	$-0.66 \left {}^1D_{\{2, -2\}} \right\rangle - 0.66 \left {}^1D_{\{2, 2\}} \right\rangle + 0.21 \left {}^3P_{\{2, -2\}} \right\rangle + 0.21 \left {}^3P_{\{2, 2\}} \right\rangle$
17 170	$-0.93 \left {}^1D_{\{2, 0\}} \right\rangle + 0.14 \left {}^3F_{\{2, 0\}} \right\rangle + 0.3 \left {}^3P_{\{2, 0\}} \right\rangle$
20 907	$-0.1 \left {}^1S_{\{0, 0\}} \right\rangle - 0.99 \left {}^3P_{\{0, 0\}} \right\rangle$
21 284	$-0.27 \left {}^1I_{\{6, -5\}} \right\rangle + 0.59 \left {}^1I_{\{6, -3\}} \right\rangle + 0.28 \left {}^1I_{\{6, -1\}} \right\rangle -$ $0.28 \left {}^1I_{\{6, 1\}} \right\rangle - 0.59 \left {}^1I_{\{6, 3\}} \right\rangle + 0.27 \left {}^1I_{\{6, 5\}} \right\rangle$

21 304	$0.61 \left {}^1\text{I}_{\{6, -4\}} \right\rangle - 0.41 \left {}^1\text{I}_{\{6, 0\}} \right\rangle + 0.61 \left {}^1\text{I}_{\{6, 4\}} \right\rangle - 0.17 \left {}^1\text{I}_{\{6, 6\}} \right\rangle$
21 340	$-0.22 \left {}^1\text{I}_{\{6, -6\}} \right\rangle + 0.46 \left {}^1\text{I}_{\{6, -4\}} \right\rangle + 0.48 \left {}^1\text{I}_{\{6, -2\}} \right\rangle -$ $0.48 \left {}^1\text{I}_{\{6, 2\}} \right\rangle - 0.46 \left {}^1\text{I}_{\{6, 4\}} \right\rangle + 0.22 \left {}^1\text{I}_{\{6, 6\}} \right\rangle$
21 390	$-0.62 \left {}^1\text{I}_{\{6, -3\}} \right\rangle + 0.32 \left {}^1\text{I}_{\{6, -1\}} \right\rangle + 0.32 \left {}^1\text{I}_{\{6, 1\}} \right\rangle - 0.62 \left {}^1\text{I}_{\{6, 3\}} \right\rangle + 0.1 \left {}^1\text{I}_{\{6, 5\}} \right\rangle$
21 406	$0.47 \left {}^1\text{I}_{\{6, -4\}} \right\rangle - 0.51 \left {}^1\text{I}_{\{6, -2\}} \right\rangle + 0.51 \left {}^1\text{I}_{\{6, 2\}} \right\rangle - 0.47 \left {}^1\text{I}_{\{6, 4\}} \right\rangle + 0.12 \left {}^1\text{I}_{\{6, 6\}} \right\rangle$
21 481	$0.57 \left {}^1\text{I}_{\{6, -5\}} \right\rangle - 0.4 \left {}^1\text{I}_{\{6, -1\}} \right\rangle - 0.4 \left {}^1\text{I}_{\{6, 1\}} \right\rangle - 0.13 \left {}^1\text{I}_{\{6, 3\}} \right\rangle + 0.57 \left {}^1\text{I}_{\{6, 5\}} \right\rangle$
21 485	$0.99 \left {}^3\text{P}_{\{1, 0\}} \right\rangle$
21 517	$-0.7 \left {}^3\text{P}_{\{1, -1\}} \right\rangle + 0.7 \left {}^3\text{P}_{\{1, 1\}} \right\rangle$
21 570	$-0.29 \left {}^1\text{I}_{\{6, -3\}} \right\rangle + 0.52 \left {}^1\text{I}_{\{6, -1\}} \right\rangle - 0.52 \left {}^1\text{I}_{\{6, 1\}} \right\rangle +$ $0.29 \left {}^1\text{I}_{\{6, 3\}} \right\rangle + 0.1 \left {}^1\text{I}_{\{6, 5\}} \right\rangle - 0.36 \left {}^3\text{P}_{\{1, -1\}} \right\rangle - 0.36 \left {}^3\text{P}_{\{1, 1\}} \right\rangle$
21 588	$0.64 \left {}^1\text{I}_{\{6, -2\}} \right\rangle - 0.38 \left {}^1\text{I}_{\{6, 0\}} \right\rangle + 0.64 \left {}^1\text{I}_{\{6, 2\}} \right\rangle + 0.09 \left {}^3\text{P}_{\{2, 0\}} \right\rangle$
21 590	$0.31 \left {}^1\text{I}_{\{6, -1\}} \right\rangle - 0.31 \left {}^1\text{I}_{\{6, 1\}} \right\rangle + 0.17 \left {}^1\text{I}_{\{6, 3\}} \right\rangle + 0.61 \left {}^3\text{P}_{\{1, -1\}} \right\rangle + 0.61 \left {}^3\text{P}_{\{1, 1\}} \right\rangle$
21 637	$0.64 \left {}^1\text{I}_{\{6, -5\}} \right\rangle + 0.21 \left {}^1\text{I}_{\{6, -1\}} \right\rangle - 0.21 \left {}^1\text{I}_{\{6, 1\}} \right\rangle - 0.18 \left {}^1\text{I}_{\{6, 3\}} \right\rangle - 0.64 \left {}^1\text{I}_{\{6, 5\}} \right\rangle$
21 666	$0.37 \left {}^1\text{I}_{\{6, -6\}} \right\rangle - 0.2 \left {}^1\text{I}_{\{6, -2\}} \right\rangle - 0.75 \left {}^1\text{I}_{\{6, 0\}} \right\rangle -$ $0.2 \left {}^1\text{I}_{\{6, 2\}} \right\rangle - 0.18 \left {}^1\text{I}_{\{6, 4\}} \right\rangle + 0.37 \left {}^1\text{I}_{\{6, 6\}} \right\rangle$
21 804	$0.41 \left {}^1\text{I}_{\{6, -5\}} \right\rangle + 0.32 \left {}^1\text{I}_{\{6, -3\}} \right\rangle + 0.48 \left {}^1\text{I}_{\{6, -1\}} \right\rangle +$ $0.48 \left {}^1\text{I}_{\{6, 1\}} \right\rangle + 0.32 \left {}^1\text{I}_{\{6, 3\}} \right\rangle + 0.41 \left {}^1\text{I}_{\{6, 5\}} \right\rangle$
21 889	$-0.66 \left {}^1\text{I}_{\{6, -6\}} \right\rangle - 0.24 \left {}^1\text{I}_{\{6, -4\}} \right\rangle + 0.24 \left {}^1\text{I}_{\{6, 4\}} \right\rangle + 0.66 \left {}^1\text{I}_{\{6, 6\}} \right\rangle$
21 957	$0.56 \left {}^1\text{I}_{\{6, -6\}} \right\rangle + 0.28 \left {}^1\text{I}_{\{6, -4\}} \right\rangle + 0.19 \left {}^1\text{I}_{\{6, -2\}} \right\rangle + 0.3 \left {}^1\text{I}_{\{6, 0\}} \right\rangle +$ $0.19 \left {}^1\text{I}_{\{6, 2\}} \right\rangle + 0.28 \left {}^1\text{I}_{\{6, 4\}} \right\rangle + 0.56 \left {}^1\text{I}_{\{6, 6\}} \right\rangle - 0.16 \left {}^3\text{P}_{\{2, 0\}} \right\rangle$

22 669	$-0.2 \left {}^1D_{\{2, -2\}} \right\rangle + 0.2 \left {}^1D_{\{2, 2\}} \right\rangle - 0.67 \left {}^3P_{\{2, -2\}} \right\rangle + 0.67 \left {}^3P_{\{2, 2\}} \right\rangle$
22 705	$-0.2 \left {}^1D_{\{2, -1\}} \right\rangle - 0.2 \left {}^1D_{\{2, 1\}} \right\rangle - 0.67 \left {}^3P_{\{2, -1\}} \right\rangle - 0.67 \left {}^3P_{\{2, 1\}} \right\rangle$
22 738	$-0.22 \left {}^1D_{\{2, -2\}} \right\rangle - 0.22 \left {}^1D_{\{2, 2\}} \right\rangle - 0.66 \left {}^3P_{\{2, -2\}} \right\rangle - 0.66 \left {}^3P_{\{2, 2\}} \right\rangle$
22 787	$-0.21 \left {}^1D_{\{2, -1\}} \right\rangle + 0.21 \left {}^1D_{\{2, 1\}} \right\rangle - 0.67 \left {}^3P_{\{2, -1\}} \right\rangle + 0.67 \left {}^3P_{\{2, 1\}} \right\rangle$
22 818	$-0.31 \left {}^1D_{\{2, 0\}} \right\rangle - 0.1 \left {}^1I_{\{6, 6\}} \right\rangle - 0.93 \left {}^3P_{\{2, 0\}} \right\rangle$
46 965	$-0.99 \left {}^1S_{\{0, 0\}} \right\rangle + 0.1 \left {}^3P_{\{0, 0\}} \right\rangle$