

$^{46}\text{Ti}(\text{p,p}),(\text{p,p}')\text{:res}$

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	S. Ota and E. A. Mccutchan		NDS 203,1 (2025)	1-Apr-2025

1961Du03: E(p)=800-1400 keV. Measured excitation functions using magnetic analyzer and NaI detector. Observed 30 resonances with an average level spacing of ≈ 13 keV and notes that the natural half-widths of all resonances observed was less than 0.5 keV.

1969Ky01: E=2.5-2.9 MeV; overall energy resolution ≈ 1700 eV. Measured $\gamma(\theta)(889\gamma)$ and γ -ray excitation function for the first-excited, 2^+ , state; NaI. Observed 45 resonances; deduced J^π and resonance parameters.

1971Ka23: E=1350-2280 keV. Measured excitation functions; NaI. Observed 126 resonances in the excitation energy range of 6.5 to 7.4 MeV with an average level spacing of ≈ 6 keV. Compared to resonances in $^{48}\text{Ti}(\text{p},\gamma)$. Identified eight prominent resonances as isobaric analogs of states in ^{47}Ti .

1973Pr02: E=1.5-3.1 MeV; overall resolution ≈ 300 eV. Measured $\sigma(\theta)$ at four angles. Observed 144 resonances; deduced J^π , resonance parameters, and exit-channel L.

1979Ch20: E=2.25-3.10 MeV; overall resolution=350 eV. Measured $\sigma(\theta)$, $\gamma(\theta)$; surface barrier, NaI. Studied $(\text{p,p}'\gamma)$ to the first-excited, 2^+ , state for 47 L=1 and five L=3 resonances between 2.25 and 3.10 MeV. Deduced J^π and resonance parameters.

See **1977Ha45** for a compilation and comparison of the resonances observed by **1973Pr02**, **1971Ka23**, **1969Ky01**, and **1961Du03**.

See also $^{46}\text{Ti}(\text{p},\gamma)$ E=0.72-4 MeV and E=0.4-1.8 MeV.

 ^{47}V Levels

E(level)	J^π	S	Comments
0.0			
6023.6 10			$E_p(\text{lab})=874.4$.
6087.8 10			$E_p(\text{lab})=940$.
6099.3 10			$E_p(\text{lab})=951.8$.
6121.8 10			$E_p(\text{lab})=974.8$.
6132.4 10			$E_p(\text{lab})=985.6$.
6153.5 10			$E_p(\text{lab})=1007.2$.
6156.9 10			$E_p(\text{lab})=1010.6$.
6166.1 10			$E_p(\text{lab})=1020$.
6190.4 10			$E_p(\text{lab})=1044.9$.
6229.1 10			$E_p(\text{lab})=1084.4$.
6239.9 10			$E_p(\text{lab})=1095.4$.
6270.8 10			$E_p(\text{lab})=1127$.
6296.0 10			$E_p(\text{lab})=1152.8$.
6324.6 10			$E_p(\text{lab})=1182$.
6350.1 10			$E_p(\text{lab})=1208$.
6363.7 10			$E_p(\text{lab})=1221.9$.
6373.2 10			$E_p(\text{lab})=1231.6$.
6386.8 10			$E_p(\text{lab})=1245.5$.
6393.3 10			$E_p(\text{lab})=1252.2$.
6408.1 10			$E_p(\text{lab})=1267.3$.
6426.1 10			$E_p(\text{lab})=1285.7$.
6474.8 10			$E_p(\text{lab})=1335.4$.
6482.6 10			$E_p(\text{lab})=1343.4$.
6485.4 10			$E_p(\text{lab})=1346.3$.
6496.8 10			$E_p(\text{lab})=1357.9$.
6503.2 10			$E_p(\text{lab})=1364.5$.
6528.9 10			$E_p(\text{lab})=1390.7$.
6694 3	$1/2^+$	90 15	$E_p(\text{lab})=1559.3$, $\gamma_p^2=12.28$.
6699 3	$(1/2^-)$	100 10	$E_p(\text{lab})=1564.7$, $\gamma_p^2=35.35$.
6741 3	$(1/2^-)$	25 10	$E_p(\text{lab})=1607.1$, $\gamma_p^2=7.13$.
6747 3	$(1/2^-)$	10 5	$E_p(\text{lab})=1613.3$, $\gamma_p^2=2.76$.
6817 3	$(1/2^-)$	20 10	$E_p(\text{lab})=1685.3$, $\gamma_p^2=3.88$.
6901 3	$(1/2^-)$	20 10	$E_p(\text{lab})=1771.3$, $\gamma_p^2=2.65$.

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$^{46}\text{Ti}(\text{p,p}),(\text{p,p}')\text{:res (continued)}$ ^{47}V Levels (continued)

E(level)	J^π	S	Comments
6943 3	$1/2^-$	155 25	$E_p(\text{lab})=1813.5, \gamma_p^2=16.96.$
6951 3	$1/2^-$	90 10	$E_p(\text{lab})=1821.8, \gamma_p^2=9.54.$
6959 3	$1/2^-$	60 10	$E_p(\text{lab})=1829.8, \gamma_p^2=6.1.$
6978 3	$1/2^-$	55 20	$E_p(\text{lab})=1849.8, \gamma_p^2=5.24.$
6979 3	$1/2^-$	50 15	$E_p(\text{lab})=1850.8, \gamma_p^2=4.74.$
7015 3	$3/2^-$	40 15	$E_p(\text{lab})=1887, \gamma_p^2=3.3.$
7043 3	$1/2^-$	40 10	$E_p(\text{lab})=1916.3, \gamma_p^2=2.95.$
7089 3	$1/2^-$	50 5	$E_p(\text{lab})=1963.1, \gamma_p^2=3.09.$
7098 3	$(1/2^-)$	10 5	$E_p(\text{lab})=1972.1, \gamma_p^2=0.6.$
7119 3	$(1/2^-)$	5 3	$E_p(\text{lab})=1993.9, \gamma_p^2=0.28.$
7149 3	$1/2^-$	30 5	$E_p(\text{lab})=2023.8, \gamma_p^2=1.49.$
7152 3	$(1/2^-)$	15 5	$E_p(\text{lab})=2026.9, \gamma_p^2=0.74.$
7211 3	$1/2^+$	40 5	$E_p(\text{lab})=2087.8, \gamma_p^2=0.67.$
7227 3	$1/2^-$	3.3×10^2 5	$E_p(\text{lab})=2103.5, \gamma_p^2=12.38.$
7227 3	$1/2^-$	100 25	$E_p(\text{lab})=2103.8, \gamma_p^2=3.81.$
7274 3	$(1/2^-)$	5 3	$E_p(\text{lab})=2151.5, \gamma_p^2=0.16.$
7284 3	$1/2^+$	5 3	$E_p(\text{lab})=2162.2, \gamma_p^2=0.06.$
7302 3	$1/2^-$	80 10	$E_p(\text{lab})=2180.8, \gamma_p^2=2.41.$
7306 3	$1/2^+$	165 20	$E_p(\text{lab})=2184.2, \gamma_p^2=2.09.$
7321 3	$(1/2^-)$	5 3	$E_p(\text{lab})=2200.2, \gamma_p^2=0.14.$
7339 3	$1/2^-$	120 10	$E_p(\text{lab})=2217.9, \gamma_p^2=3.24.$
7358 3	$1/2^+$	50 5	$E_p(\text{lab})=2238.1, \gamma_p^2=0.55.$
7371 3	$3/2^-$	40 5	$E_p(\text{lab})=2250.8, \gamma_p^2=0.98.$
7401 3	$1/2^+$	175 20	$E_p(\text{lab})=2281.7, \gamma_p^2=1.71.$
7409 3	$3/2^-$	3.3×10^2 6	$E_p(\text{lab})=2290, \gamma_p^2=7.27.$
7424 3	$1/2^+$	40 5	$E_p(\text{lab})=2305.1, \gamma_p^2=0.37.$
7435 3	$3/2^-$	25 5	$E_p(\text{lab})=2316.3, \gamma_p^2=0.51.$
7445 3	$1/2^+$	175 25	$E_p(\text{lab})=2327.1, \gamma_p^2=1.53.$
7446 3	$(5/2^+)$	8 3	$E_p(\text{lab})=2328, \gamma_p^2=0.78.$
7465 3	$(5/2^+)$	12 5	$E_p(\text{lab})=2347.5, \gamma_p^2=1.11.$
7467 3	$1/2^-$	220 20	$E_p(\text{lab})=2349.2, \gamma_p^2=4.13.$
7489 3	$(1/2^-)$	10 5	$E_p(\text{lab})=2372, \gamma_p^2=0.18.$
7512 3	$3/2^-$	50 5	$E_p(\text{lab})=2395, \gamma_p^2=0.84.$
7542 3	$1/2^+$	20 5	$E_p(\text{lab})=2425.7, \gamma_p^2=0.14.$
7596 3	$1/2^-$	3.10×10^3 20	$E_p(\text{lab})=2481.2, \gamma_p^2=41.92.$
7602 3	$1/2^+$	60 10	$E_p(\text{lab})=2486.7, \gamma_p^2=0.36.$
7613 3	$1/2^-$	110 15	$E_p(\text{lab})=2498.5, \gamma_p^2=1.43.$
7619 3	$(5/2^+)$	10 5	$E_p(\text{lab})=2504.4, \gamma_p^2=0.6.$
7623 3	$3/2^-$	2.5×10^2 8	$E_p(\text{lab})=2508.7, \gamma_p^2=3.17.$
			$E_p(\text{lab}), J^\pi$ other: 2506, $3/2$ (1969Ky01).
7629 3	$1/2^+$	2×10^1 5	$E_p(\text{lab})=2515.1, \gamma_p^2=1.37.$
7637 3	$5/2^+$	10 5	$E_p(\text{lab})=2522.6, \gamma_p^2=0.57.$
			$E_p(\text{lab}), J^\pi$ other: 2521, $5/2^+$ (1969Ky01).
7644 3	$3/2^-$	35 10	$E_p(\text{lab})=2529.7, \gamma_p^2=0.42.$
			$E_p(\text{lab}), J^\pi$ other: 2529, $5/2$ (1969Ky01).
7647 3	$1/2^-$	2.6×10^3 3	$E_p(\text{lab})=2533.3, \gamma_p^2=31.14.$
7652 3	$1/2^+$	4.0×10^2 8	$E_p(\text{lab})=2538, \gamma_p^2=2.18.$
7653 3	$(5/2^+)$	5 3	$E_p(\text{lab})=2539.1, \gamma_p^2=0.27.$
7664 3	$3/2^-$	20 10	$E_p(\text{lab})=2550.6, \gamma_p^2=0.23.$
			$E_p(\text{lab}), J^\pi$ other: 2549, $3/2$ (1969Ky01).

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$^{46}\text{Ti}(\text{p,p}),(\text{p,p}):\text{res (continued)}$ ^{47}V Levels (continued)

E(level)	J^π	S	Comments
7667 3	$5/2^-$	1 1	$E_p(\text{lab})=2553.9, \gamma_p^2=0.47.$
7672 3	$(3/2^+)$	8 4	$E_p(\text{lab})=2558.9, \gamma_p^2=0.41.$
			$E_p(\text{lab}), J^\pi$ other: 2558, 3/2 (1969Ky01).
7681 3	$3/2^-$	20 10	$E_p(\text{lab})=2568, \gamma_p^2=0.22.$
			$E_p(\text{lab}), J^\pi$ other: 2567, 3/2 (1969Ky01).
7682 3	$3/2^+$	25 10	$E_p(\text{lab})=2568.5, \gamma_p^2=1.26.$
7692 3	$5/2^+$	40 15	$E_p(\text{lab})=2578.7, \gamma_p^2=1.97.$
			$E_p(\text{lab}), J^\pi$ other: 2578, $5/2^+, (5/2^-)$ (1969Ky01).
7693 3	$1/2^-$	5.3×10^2 5	$E_p(\text{lab})=2580.1, \gamma_p^2=5.66.$
7706 3	$3/2^-$	130 15	$E_p(\text{lab})=2592.9, \gamma_p^2=1.36.$
			$E_p(\text{lab}), J^\pi$ other: 2592, 3/2 (1969Ky01).
7707 3	$3/2^+$	30 10	$E_p(\text{lab})=2593.9, \gamma_p^2=1.42.$
			$E_p(\text{lab}), J^\pi$ other: 2597, 3/2 (1969Ky01).
7712 3	$1/2^+$	3.3×10^2 6	$E_p(\text{lab})=2599.4, \gamma_p^2=1.56.$
7712 3	$3/2^+$	5 3	$E_p(\text{lab})=2599.8, \gamma_p^2=0.23.$
7719 3	$5/2^+$	10 5	$E_p(\text{lab})=2606.8, \gamma_p^2=0.46.$
7726 3	$5/2^+$	20 10	$E_p(\text{lab})=2614.2, \gamma_p^2=0.9.$
			$E_p(\text{lab}), J^\pi$ other: 2612, $5/2^+, (5/2^-)$ (1969Ky01).
7744 3	$3/2^-$	65 10	$E_p(\text{lab})=2632.2, \gamma_p^2=0.63.$
			$E_p(\text{lab}), J^\pi$ other: 2635, 3/2 (1969Ky01).
7749 3	$3/2^-$	60 10	$E_p(\text{lab})=2636.8, \gamma_p^2=0.57.$
			$E_p(\text{lab}), J^\pi$ other: 2638, $5/2^+, (5/2^-)$ (1969Ky01).
7764 3	$5/2^+$	35 10	$E_p(\text{lab})=2652.9, \gamma_p^2=1.43.$
			$E_p(\text{lab}), J^\pi$ other: 2651, $5/2^+, (5/2^-)$ (1969Ky01).
7795 3	$3/2^-$	30 10	$E_p(\text{lab})=2684.2, \gamma_p^2=0.26.$
			$E_p(\text{lab}), J^\pi$ other: 2682, 3/2 (1969Ky01).
7800 3	$5/2^+$	15 5	$E_p(\text{lab})=2689.9, \gamma_p^2=0.56.$
			$E_p(\text{lab}), J^\pi$ other: 2687, $5/2^+$ (1969Ky01).
7806 3	$5/2^-$	4 2	$E_p(\text{lab})=2695.3, \gamma_p^2=1.24.$
			$E_p(\text{lab}), J^\pi$ other: 2692, $5/2^+$ (1969Ky01).
7810 3	$3/2^-$	1.45×10^3 15	$E_p(\text{lab})=2699.0, \gamma_p^2=12.15.$
			$E_p(\text{lab}), J^\pi$ other: 2696, $5/2, (3/2)$ (1969Ky01).
7816 3	$3/2^-$	1.40×10^3 15	$E_p(\text{lab})=2705.6, \gamma_p^2=11.58.$
			$E_p(\text{lab}), J^\pi$ other: 2703, 3/2 (1969Ky01).
7820 3	$3/2^-$	135 25	$E_p(\text{lab})=2709.6, \gamma_p^2=1.11.$
7820 3	$5/2^+$	40 15	$E_p(\text{lab})=2709.7, \gamma_p^2=1.43.$
			$E_p(\text{lab}), J^\pi$ other: 2707, $5/2^+, (5/2^-)$ (1969Ky01).
7829 3	$1/2^+$	115 15	$E_p(\text{lab})=2719, \gamma_p^2=0.44.$
7848 3	$1/2^-$	215 20	$E_p(\text{lab})=2738, \gamma_p^2=1.67.$
			$E_p(\text{lab}), J^\pi$ other: 2734, 1/2 (1969Ky01).
7851 3	$3/2^-$	110 15	$E_p(\text{lab})=2741.1, \gamma_p^2=0.85.$
			$E_p(\text{lab}), J^\pi$ other: 2750, 3/2 (1969Ky01).
7868 3	$1/2^+$	1.10×10^3 20	$E_p(\text{lab})=2758.4, \gamma_p^2=3.95.$
7872 3	$3/2^-$	25 10	$E_p(\text{lab})=2762.6, \gamma_p^2=0.18.$
			$E_p(\text{lab}), J^\pi$ other: 2759, 3/2 (1969Ky01).
7876 3	$3/2^+$	15 10	$E_p(\text{lab})=2767, \gamma_p^2=0.47.$
7887 3	$1/2^+$	20 5	$E_p(\text{lab})=2778.3, \gamma_p^2=0.06.$
7894 3	$5/2^+$	10 5	$E_p(\text{lab})=2785, \gamma_p^2=0.3.$
			$E_p(\text{lab}), J^\pi$ other: 2783, $5/2^+$ (1969Ky01).
7898 3	$1/2^+$	8.0×10^2 10	$E_p(\text{lab})=2789.1, \gamma_p^2=2.73.$
			$E_p(\text{lab}), J^\pi$ other: 2788, 3/2 (1969Ky01).
7906 3	$1/2^-$	40 10	$E_p(\text{lab})=2797.2, \gamma_p^2=0.28.$

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$^{46}\text{Ti}(\text{p,p}),(\text{p,p}')\text{:res (continued)}$ ^{47}V Levels (continued)

E(level)	J^π	S	Comments
7907 3	$5/2^+$	30 5	$E_p(\text{lab})=2799$, $\gamma_p^2=0.87$. $E_p(\text{lab}),J^\pi$ other: 2796, $5/2^+, (5/2^-)$ (1969Ky01).
7909 3	$3/2^-$	10 5	$E_p(\text{lab})=2801$, $\gamma_p^2=0.06$.
7922 3	$3/2^+$	5 3	$E_p(\text{lab})=2814.4$, $\gamma_p^2=0.14$. $E_p(\text{lab}),J^\pi$ other: 2812, $3/2$ (1969Ky01).
7928 3	$3/2^-$	35 10	$E_p(\text{lab})=2820.6$, $\gamma_p^2=0.23$. $E_p(\text{lab}),J^\pi$ other: 2818, $3/2$ (1969Ky01).
7936 3	$3/2^+$	15 5	$E_p(\text{lab})=2828.4$, $\gamma_p^2=0.41$. $E_p(\text{lab}),J^\pi$ other: 2826, $3/2$ (1969Ky01).
7940 3	$3/2^-$	55 10	$E_p(\text{lab})=2832.6$, $\gamma_p^2=0.36$. $E_p(\text{lab}),J^\pi$ other: 2830, $3/2$ (1969Ky01).
7942 3	$5/2^+$	70 10	$E_p(\text{lab})=2834.4$, $\gamma_p^2=1.89$. $E_p(\text{lab}),J^\pi$ other: 2832, $5/2^+, (5/2^-)$ (1969Ky01).
7947 3	$5/2^-$	10 5	$E_p(\text{lab})=2839.7$, $\gamma_p^2=2.12$. $E_p(\text{lab}),J^\pi$ other: 2838, $5/2^+, (5/2^-)$ (1969Ky01).
7949 3	$1/2^+$	9.0×10^2 10	$E_p(\text{lab})=2841.4$, $\gamma_p^2=2.82$.
7950 3	$3/2^-$	15 5	$E_p(\text{lab})=2842.9$, $\gamma_p^2=0.4$. $E_p(\text{lab}),J^\pi$ other: 2840, $3/2$ (1969Ky01).
7953 3	$1/2^-$	1.20×10^3 15	$E_p(\text{lab})=2845.6$, $\gamma_p^2=7.58$.
7953 3	$5/2^-$	25 10	$E_p(\text{lab})=2845.9$, $\gamma_p^2=5.23$. $E_p(\text{lab}),J^\pi$ other: 2844, $5/2^+$ (1969Ky01).
7963 3	$5/2^+$	20 5	$E_p(\text{lab})=2855.7$, $\gamma_p^2=0.52$. $E_p(\text{lab}),J^\pi$ other: 2853, $5/2^+$ (1969Ky01).
7971 3	$3/2^-$	5.3×10^2 5	$E_p(\text{lab})=2863.8$, $\gamma_p^2=3.21$. $E_p(\text{lab}),J^\pi$ other: 2862, $3/2$ (1969Ky01).
7971 3	$3/2^-$	25 10	$E_p(\text{lab})=2864.3$, $\gamma_p^2=0.15$.
7973 3	$5/2^+$	10 5	$E_p(\text{lab})=2865.8$, $\gamma_p^2=0.25$. $E_p(\text{lab}),J^\pi$ other: 2868, $5/2^+, (5/2^-)$ (1969Ky01).
7978 3	$5/2^-$	15 5	$E_p(\text{lab})=2870.8$, $\gamma_p^2=2.95$.
7980 3	$3/2^-$	1.5×10^2 3	$E_p(\text{lab})=2873.2$, $\gamma_p^2=0.9$. $E_p(\text{lab}),J^\pi$ other: 2871, $3/2$ (1969Ky01).
7980 3	$3/2^-$	40 20	$E_p(\text{lab})=2873.6$, $\gamma_p^2=0.24$.
7987 3	$5/2^+$	40 15	$E_p(\text{lab})=2880.9$, $\gamma_p^2=0.98$. $E_p(\text{lab}),J^\pi$ other: 2879, $5/2^+$ (1969Ky01).
7988 3	$1/2^+$	30 20	$E_p(\text{lab})=2881.1$, $\gamma_p^2=0.08$.
8004 3	$3/2^-$	125 20	$E_p(\text{lab})=2897.7$, $\gamma_p^2=0.72$. $E_p(\text{lab}),J^\pi$ other: 2898, $3/2, 1/2$ (1969Ky01).
8004 3	$3/2^-$	15 10	$E_p(\text{lab})=2898.1$, $\gamma_p^2=0.08$.
8007 3	$5/2^+$	8 5	$E_p(\text{lab})=2901.1$, $\gamma_p^2=0.19$.
8012 3	$(5/2^+)$	30 15	$E_p(\text{lab})=2905.5$, $\gamma_p^2=0.7$.
8012 3	$3/2^-$	2.8×10^2 10	$E_p(\text{lab})=2905.7$, $\gamma_p^2=1.59$. $E_p(\text{lab}),J^\pi$ other: 2906, $3/2$ (1969Ky01).
8012 3	$3/2^-$	1.5×10^3 3	$E_p(\text{lab})=2906$, $\gamma_p^2=8.51$.
8018 3	$5/2^+$	5 3	$E_p(\text{lab})=2911.8$, $\gamma_p^2=0.11$.
8029 3	$(5/2^+)$	5 3	$E_p(\text{lab})=2923.2$, $\gamma_p^2=0.11$.
8030 3	$1/2^+$	25 10	$E_p(\text{lab})=2924.5$, $\gamma_p^2=0.06$.
8036 3	$3/2^-$	20 10	$E_p(\text{lab})=2930.7$, $\gamma_p^2=0.11$.
8037 3	$1/2^+$	9.0×10^2 10	$E_p(\text{lab})=2931.2$, $\gamma_p^2=2.45$.
8039 3	$5/2^+$	5 3	$E_p(\text{lab})=2933.2$, $\gamma_p^2=0.01$.
8040 3	$3/2^-$	1.5×10^2 3	$E_p(\text{lab})=2935$, $\gamma_p^2=0.81$.
8044 3	$(5/2^+)$	5 3	$E_p(\text{lab})=2938.9$, $\gamma_p^2=0.11$.

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$^{46}\text{Ti}(\text{p,p}),(\text{p,p}):\text{res (continued)}$ ^{47}V Levels (continued)

E(level)	J^π	S	Comments
8045 3	(5/2 ⁺)	5 3	$E_p(\text{lab})=2939.5, \gamma_p^2=0.11.$
8045 3	1/2 ⁻	1.40×10 ³ 20	$E_p(\text{lab})=2939.7, \gamma_p^2=7.49.$
8046 3	(5/2 ⁺)	45 10	$E_p(\text{lab})=2941.2, \gamma_p^2=0.97.$
8051 3	(5/2 ⁻)	5 3	$E_p(\text{lab})=2946.3, \gamma_p^2=0.82.$
8052 3	(5/2 ⁺)	5 3	$E_p(\text{lab})=2947.2, \gamma_p^2=0.11.$
8058 3	3/2 ⁻	50 15	$E_p(\text{lab})=2952.6, \gamma_p^2=0.26.$
8061 3	1/2 ⁻	1.80×10 ³ 20	$E_p(\text{lab})=2956.2, \gamma_p^2=9.36.$
8066 3	3/2 ⁻	110 15	$E_p(\text{lab})=2960.7, \gamma_p^2=0.57.$
8070 3	1/2 ⁻	175 20	$E_p(\text{lab})=2965.5, \gamma_p^2=0.9.$
8088 3	1/2 ⁻	75 15	$E_p(\text{lab})=2983.6, \gamma_p^2=0.37.$
8102 3	(5/2 ⁺)	15 5	$E_p(\text{lab})=2997.6, \gamma_p^2=0.29.$
8109 3	1/2 ⁻	190 25	$E_p(\text{lab})=3004.7, \gamma_p^2=0.91.$
8112 3	(5/2 ⁺)	35 15	$E_p(\text{lab})=3007.7, \gamma_p^2=0.66.$
8125 3	1/2 ⁺	6.5×10 ² 8	$E_p(\text{lab})=3021.2, \gamma_p^2=1.55.$
8127 3	(5/2 ⁺)	25 10	$E_p(\text{lab})=3023.1, \gamma_p^2=0.46.$
8131 3	1/2 ⁻	20 10	$E_p(\text{lab})=3027.9, \gamma_p^2=0.09.$
8142 3	(5/2 ⁺)	30 15	$E_p(\text{lab})=3039.2, \gamma_p^2=0.53.$
8151 3	(3/2 ⁺)	12 5	$E_p(\text{lab})=3047.6, \gamma_p^2=0.21.$
8152 3	1/2 ⁻	7.0×10 ² 8	$E_p(\text{lab})=3049, \gamma_p^2=3.12.$
8155 3	(5/2 ⁺)	3 2	$E_p(\text{lab})=3052.4, \gamma_p^2=0.05.$
8162 3	(5/2 ⁺)	2 1	$E_p(\text{lab})=3059.1, \gamma_p^2=0.03.$
8163 3	3/2 ⁻	70 15	$E_p(\text{lab})=3060.5, \gamma_p^2=0.31.$
8168 3	1/2 ⁻	5.5×10 ² 8	$E_p(\text{lab})=3065.4, \gamma_p^2=2.39.$
8170 3	1/2 ⁺	3.0×10 ² 5	$E_p(\text{lab})=3067.8, \gamma_p^2=0.67.$
8172 3	(3/2 ⁺)	35 15	$E_p(\text{lab})=3069.1, \gamma_p^2=0.59.$