^{31}P(t,p) **1969Da07**

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Jun Chen and Balraj Singh	NDS 199,1 (2025)	30-Sep-2024

$J^{\pi}(^{31}\text{P g.s.})=1/2^{+}$.

1969Da07: E=12.1 MeV triton beam was produced from the AWRE Aldermaston tandem Van de Graaff. Target was $\approx$300 μg/cm^2 phosphorus evaporated onto a 10 μg/cm^2 carbon backing. Reaction products were momentum-analyzed with a 24-gap magnetic spectrograph and detected with Ilford K-2 nuclear emulsions. Measured $\sigma(E_p,\theta)$, $\theta_{\text{c.m.}}$=0° to 80°. Deduced levels, J, π, L-transfers from DWBA analysis. Comparisons with available data and theoretical calculations.

1970Ha48: E=2.45 and 3.10 MeV triton beams were produced from the BNL 3.5-MV Van de Graaff accelerator. Target was 200 μg/cm^2 Zn$_3$P$_2$ evaporated onto a carbon backing. Charged particles were detected with a silicon surface-barrier detector (FWHM=28 keV). Measured proton spectra. Deduced levels.

1973Po02,1973Po03: 2.9 MeV triton beam was produced from the Lockheed Palo Alto Research laboratory. Target was about 700 μg/cm^2 Zn$_2$P$_3$ evaporated onto 0.003-cm-thick tantalum. Charged particles were detected with an annular detector. Measured proton spectra. Deduced levels. Report 23 levels.

1973Wa14: E=2.5 and 3.1 MeV triton beams were produced from the 3-MV Van de Graaff of the Centre de Recherches Nucleaires de Strasbourg-Cronenbourg. Targets were 300 and 100 μg/cm^2 Zn$_2$P$_3$ evaporated onto 0.03 mm molybdenum backings. Charged particles were detected with an annular silicon surface-barrier detector. Measured proton spectra. Deduced levels. Report 10 levels.

Additional information 1.

^{33}P Levels

E(level)[†]	L[‡]	Comments
0	0	
1427 *15*	2	E(level): other: 1430 (1973Po03,1973Wa14).
1845 *15*	2	E(level): other: 1850 (1973Po03,1973Wa14).
2530 *15*	2	E(level): other: 2540 (1973Po03,1973Wa14).
3277 *12*	(2)	E(level): weighted average of 3272 *15* (1969Da07) and 3280 *12* (1970Ha48). Other: 3280 (1973Po02,1973Wa14).
3491 *10*		E(level): weighted average of 3488 *15* (1969Da07) and 3492 *10* (1970Ha48). Other: 3490 (1973Po02,1973Wa14).
3630 *13*		E(level): weighted average of 3623 *15* (1969Da07) and 3636 *13* (1970Ha48). Other: 3630 (1973Po02,1973Wa14).
4048 *10*		E(level): weighted average of 4044 *15* (1969Da07) and 4050 *10* (1970Ha48). Other: 4050 (1973Po03,1973Wa14).
4181[#] *14*		E(level): other: 4190+4220 doublet (1973Po03,1973Wa14).
4217 *14*	3	E(level): weighted average of 4218 *15* (1969Da07) and 4217 *14* (1970Ha48).
4847 *20*		E(level): other: 4860 (1973Po03).
5039 *20*		E(level): other: 5050 (1973Po03).
5177 *20*		E(level): other: 5190 (1973Po03).
5410[@]		
5438 *20*		E(level): other: 5460 (1973Po03).
5485 *20*		E(level): other: 5500 (1973Po03).
5535 *20*		E(level): other: 5560 (1973Po03).
5619 *20*		E(level): other: 5630 (1973Po03).
5650 *20*	0	E(level): other: 5660 (1973Po03).
5730[@]		
5783 *20*		E(level): other: 5800 (1973Po03).
5930[@]		
5990[@]		
6110[@]		

[†] From 1969Da07, unless otherwise noted.
[‡] From DWBA analysis of measured $\sigma(\theta)$ in 1969Da07.

Continued on next page (footnotes at end of table)

^{31}P(t,p)   **1969Da07** (continued)

^{33}P Levels (continued)

From 1970Ha48.
@ From 1973Po03.