

$^{176}\text{Lu}(t,p)$ 1981Gi01

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	E. Achterberg, O. A. Capurro, G. V. Marti		NDS 110, 1473 (2009)	31-May-2008

1981Gi01: Reaction $^{176}\text{Lu}(t,p)^{178}\text{Lu}$, $E(t)=17$ MeV. Emitted protons analyzed with a Q3D magnetic spectrometer, fitted with a position sensitive proportional detector with a $\text{FWHM}\approx 15$ keV resolution. Measurements taken at 5° steps from $\theta=15^\circ$ to $\theta=60^\circ$. Determine L-transfer values by comparison of experimental angular distributions with theoretical DWBA calculations.

 ^{178}Lu Levels

The level energies have been recalculated by the evaluators using the value $Q(t,p)=4616.135$ keV, based on the AME2003 updated atomic mass values (2003Au03). This replaces the $Q(t,p)=4581.40$ keV used by 1981Gi01, which agrees with values from the 1977 atomic mass adjustment (1977Wa08). See Comments column for original data from 1981Gi01.

E(level) [‡]	J^π [†]	L	Comments
133 [#] 6	7^-	0	E=98 keV (1981Gi01).
332 [#] 6	(8^-)		E=297 keV (1981Gi01).
403 6			E=368 keV (1981Gi01).
553 [#] 6	(9^-)		E=518 keV (1981Gi01).
821 [#] 6	(10^-)		E=786 keV (1981Gi01).
1198 6			E=1163 keV (1981Gi01).
1364 6	7^-	0	E=1329 keV (1981Gi01). The proton intensity to this level is $\approx 85\%$ of that to the 98 keV level (1981Gi01).
1451 7			E=1416 keV (1981Gi01).
1512 7			E=1477 keV (1981Gi01).
1671 7			E=1636 keV (1981Gi01).
1692 7			E=1657 keV (1981Gi01).
1726 7			E=1691 keV (1981Gi01).
1854 7			E=1819 keV (1981Gi01).
1886 7			E=1851 keV (1981Gi01).
1958 7			E=1923 keV (1981Gi01).

[†] $J^\pi=7^-$ spins were assigned on the basis of population in the $^{176}\text{Lu}(t,p)^{178}\text{Lu}$ reaction by L=0 transitions from the ^{176}Lu $J^\pi=7^-$ ground state. Spins of other states are tentative and based on assuming a $K^\pi=7^-$ based rotational band structure.

[‡] The level energy uncertainty is mainly due to the ≈ 5 keV uncertainty in the peak positions below 1.4 MeV and ≈ 7 keV above this value in the proton spectra, with a smaller contribution due to the uncertainty in the $Q(t,p)$ value.

[#] Band(A): $K^\pi=7^-$ rotational band. Suggested configuration (1981Gi01): $\pi 7/2^+[404] + \nu 7/2^-[514]$.

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Band(A): $K^\pi=7^-$
rotational band

(10⁻) 821

(9⁻) 553

(8⁻) 332

7⁻ 133

$^{178}_{71}\text{Lu}_{107}$
