

²⁰⁴Hg(p,t) 2013Be21,1978E110,1990Ve13

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	F. G. Kondev	NDS 196,342 (2024)	1-Sep-2023

2013Be21: E(p)=25 MeV, 70 μg/cm² thick ²⁰⁴HgS target (92.64% enriched in ²⁰⁴Hg) with 12 μg/cm² thick carbon backing.

Measured triton spectra, σ(θ) using Q3D magnetic spectrograph and high-resolution, focal-plane detector (include 10% systematic uncertainty). FWHM=3-5 keV. Deduced levels, L, J, π.

1978E110: E(p)=17.5 MeV, enriched ²⁰⁴Hg target. Measured σ(θ), DWBA analysis, deduced levels, L, J, π.

1990Ve13: E(p)=25 MeV, natural Hg target. FWHM=10 keV. Measured σ(θ), DWBA analysis. Deduced levels, L, J, π.

²⁰²Hg Levels

E(level)	J ^π	L@	dσ/dΩ mb/sr#	Comments
0.0 [†]	0 ⁺ [‡]	0	0.404 41	dσ/dΩ=0.895 mb/sr 90 at 5°, 0.0571 mb/sr 59 at 17.5°.
439.4 [†] 1		2	0.156 16	dσ/dΩ=0.112 mb/sr 11 at 5°, 0.344 mb/sr 35 at 17.5°.
960.2 [†] 1		2	0.0216 23	dσ/dΩ=0.0173 mb/sr 19 at 5°, 0.0380 mb/sr 40 at 17.5°.
1120.0 1			0.0189 20	dσ/dΩ=0.0151 mb/sr 17 at 5°, 0.0188 mb/sr 21 at 17.5°.
1182.5 4			0.0011 2	dσ/dΩ=0.0015 mb/sr 3 at 17.5°.
1311.53 [†] 6		4	0.130 13	dσ/dΩ=0.236 mb/sr 24 at 5°, 0.179 mb/sr 18 at 17.5°.
1347.5 3			0.0007 2	dσ/dΩ=0.0012 mb/sr 3 at 5°, 0.0011 mb/sr 3 at 17.5°.
1389.3 2			0.0010 2	dσ/dΩ=0.0018 mb/sr 3 at 5°, 0.0065 mb/sr 8 at 17.5°.
1411.0 [†] 3	0 ⁺ [‡]	0&	0.0154 16	dσ/dΩ=0.0280 mb/sr 30 at 5°, 0.0023 mb/sr 4 at 17.5°.
1564.6 2			0.0120 13	J ^π : previous 0 ⁺ assignment in 1990Ve13 is not confirmed in 2013Be21. dσ/dΩ=0.0113 mb/sr 13 at 5°, 0.0102 mb/sr 12 at 17.5°.
1575.7 [†] 1			0.0114 12	dσ/dΩ=0.0096 mb/sr 11 at 5°, 0.0253 mb/sr 27 at 17.5°.
1624.0 1			0.0076 9	dσ/dΩ=0.0031 mb/sr 5 at 5°, 0.0043 mb/sr 5 at 17.5°.
1643.0 [†] 3	0 ⁺ [‡]	0	0.0244 25	dσ/dΩ=0.0615 mb/sr 63 at 5°, 0.0084 mb/sr 10 at 17.5°.
1655.8 13	(0 ⁺) [‡]		0.0014 3	dσ/dΩ=0.0019 mb/sr 5 at 5°, 0.0006 mb/sr 2 at 17.5°.
1678.3 [†] 2			0.0023 3	dσ/dΩ=0.0012 mb/sr 3 at 5°, 0.0032 mb/sr 4 at 17.5°.
1724.0 6			0.0007 2	dσ/dΩ=0.0004 mb/sr 1 at 17.5°.
1748.2 9			0.0017 3	dσ/dΩ=0.0023 mb/sr 4 at 5°, 0.0029 mb/sr 4 at 17.5°.
1778.9 6	(0 ⁺) [‡]		0.0013 2	dσ/dΩ=0.0021 mb/sr 4 at 5°, 0.0005 mb/sr 2 at 17.5°.
1794.1 [†] 1		2	0.0821 83	dσ/dΩ=0.0457 mb/sr 47 at 5°, 0.165 mb/sr 17 at 17.5°.
1823.2 [†] 1			0.0109 12	dσ/dΩ=0.0166 mb/sr 18 at 5°, 0.0256 mb/sr 27 at 17.5°.
1861.5 3			0.0007 2	dσ/dΩ=0.0027 mb/sr 4 at 17.5°.
1903.1 4			0.0022 3	J ^π : previous 0 ⁺ assignment in 1990Ve13 is not confirmed in 2013Be21. dσ/dΩ=0.0025 mb/sr 4 at 5°, 0.0016 mb/sr 3 at 17.5°.
1965.4 1			0.0463 47	dσ/dΩ=0.0220 mb/sr 24 at 5°, 0.0380 mb/sr 39 at 17.5°.
1988.4 1			0.0058 7	dσ/dΩ=0.0011 mb/sr 2 at 5°, 0.0033 mb/sr 5 at 17.5°.
2060.1 2			0.0028 4	dσ/dΩ=0.0013 mb/sr 3 at 5°, 0.0021 mb/sr 4 at 17.5°.
2071.4 [†] 1		2	0.0629 64	dσ/dΩ=0.0476 mb/sr 49 at 5°, 0.121 mb/sr 12 at 17.5°.
2111.8 1			0.0378 39	dσ/dΩ=0.0063 mb/sr 8 at 5°, 0.0271 mb/sr 28 at 17.5°.
2126.7 7	(0 ⁺) [‡]		0.0017 3	dσ/dΩ=0.0015 mb/sr 3 at 5°, 0.0005 mb/sr 2 at 17.5°.
2134.1 1			0.0098 11	dσ/dΩ=0.0137 mb/sr 15 at 5°, 0.0103 mb/sr 11 at 17.5°.
2155.6 2			0.0054 6	dσ/dΩ=0.0054 mb/sr 7 at 5°, 0.0045 mb/sr 6 at 17.5°.
2196.3 4			0.0	dσ/dΩ=0.0013 mb/sr 3 at 5°, 0.0007 mb/sr 2 at 17.5°.
2205.5 3			0.0015 3	dσ/dΩ=0.0125 mb/sr 14 at 5°, 0.0056 mb/sr 7 at 17.5°.
2223.5 1			0.0132 14	dσ/dΩ=0.0053 mb/sr 7 at 5°, 0.0085 mb/sr 10 at 17.5°.
2250.5 4			0.0014 2	dσ/dΩ=0.0005 mb/sr 2 at 17.5°.
2280.5 2			0.0052 6	dσ/dΩ=0.0049 mb/sr 6 at 5°, 0.0131 mb/sr 14 at 17.5°.
2294.7 2			0.0056 7	dσ/dΩ=0.0049 mb/sr 6 at 5°, 0.0113 mb/sr 13 at 17.5°.
2309.9 [†] 3			0.0014 3	dσ/dΩ=0.0015 mb/sr 3 at 5°, 0.0008 mb/sr 2 at 17.5°.
2322.9 6			0.0004 1	dσ/dΩ=0.0005 mb/sr 2 at 17.5°.
2342.1 2			0.0041 5	dσ/dΩ=0.0047 mb/sr 6 at 5°, 0.0044 mb/sr 6 at 17.5°.

Continued on next page (footnotes at end of table)

$^{204}\text{Hg}(p,t)$ **2013Be21,1978El10,1990Ve13 (continued)** ^{202}Hg Levels (continued)

E(level)	J^π	$d\sigma/d\Omega$ mb/sr [#]	Comments
2357.9 2		0.0112 12	$d\sigma/d\Omega=0.0120$ mb/sr 14 at 5°, 0.0128 mb/sr 14 at 17.5°.
2371.9 2		0.0029 4	$d\sigma/d\Omega=0.0019$ mb/sr 3 at 5°, 0.0053 mb/sr 7 at 17.5°.
2415.4 8			$d\sigma/d\Omega=0.0005$ mb/sr 2 at 17.5°.
2427.5 8		0.0004 2	$d\sigma/d\Omega=0.0005$ mb/sr 2 at 17.5°.
2441.1 2		0.0134 15	$d\sigma/d\Omega=0.0072$ mb/sr 9 at 5°, 0.0094 mb/sr 11 at 17.5°.
2461.7 2		0.0071 8	$d\sigma/d\Omega=0.0037$ mb/sr 5 at 5°, 0.0055 mb/sr 7 at 17.5°.
2473.4 4		0.0013 3	$d\sigma/d\Omega=0.0013$ mb/sr 3 at 5°, 0.0013 mb/sr 3 at 17.5°.
2515.6 [†] 2		0.0031 5	$d\sigma/d\Omega=0.0075$ mb/sr 9 at 5°, 0.0057 mb/sr 7 at 17.5°.
2550.3 2		0.0095 12	$d\sigma/d\Omega=0.0108$ mb/sr 12 at 5°, 0.0142 mb/sr 15 at 17.5°.
2560.1 2		0.0119 14	$d\sigma/d\Omega=0.0079$ mb/sr 10 at 5°, 0.0096 mb/sr 11 at 17.5°.
2570.7 10	(0 ⁺) [‡]		$d\sigma/d\Omega=0.0006$ mb/sr 2 at 5°, 0.0002 mb/sr 2 at 17.5°.
2584.6 5		0.0015 3	$d\sigma/d\Omega=0.0012$ mb/sr 2 at 5°, 0.0009 mb/sr 2 at 17.5°.
2598.5 2	0 ⁺ [‡]	0.0070 8	$d\sigma/d\Omega=0.0200$ mb/sr 22 at 5°, 0.0047 mb/sr 6 at 17.5°.
2605.0 4		0.0059 7	$d\sigma/d\Omega=0.0029$ mb/sr 5 at 5°, 0.0037 mb/sr 5 at 17.5°.
2639.1 15		0.0007 2	$d\sigma/d\Omega=0.0005$ mb/sr 2 at 5°.
2652.9 3		0.0042 6	$d\sigma/d\Omega=0.0058$ mb/sr 7 at 5°, 0.0103 mb/sr 12 at 17.5°.
2675.7 3		0.0106 13	$d\sigma/d\Omega=0.0067$ mb/sr 8 at 5°, 0.0096 mb/sr 11 at 17.5°.
2685.7 5	(0 ⁺) [‡]		$d\sigma/d\Omega=0.0017$ mb/sr 3 at 5°, 0.0004 mb/sr 2 at 17.5°.
2708.5 3		0.0044 7	$d\sigma/d\Omega=0.0063$ mb/sr 8 at 5°, 0.0073 mb/sr 9bb.
2731.4 [†] 3		0.0161 17	$d\sigma/d\Omega=0.0074$ mb/sr 9 at 5°, 0.0146 mb/sr 17 at 17.5°.
2748.2 3		0.0068 8	$d\sigma/d\Omega=0.0033$ mb/sr 6 at 5°, 0.0162 mb/sr 19 at 17.5°.
2755.0 3		0.0323 34	$d\sigma/d\Omega=0.0218$ mb/sr 24 at 5°, 0.0265 mb/sr 29 at 17.5°.
2781.7 3		0.0032 5	$d\sigma/d\Omega=0.0019$ mb/sr 3 at 5°, 0.0030 mb/sr 5 at 17.5°.
2814.7 6		0.0015 3	$d\sigma/d\Omega=0.0016$ mb/sr 3 at 17.5°.
2824.8 3		0.0123 15	$d\sigma/d\Omega=0.0089$ mb/sr 10 at 5°, 0.0156 mb/sr 17 at 17.5°.
2847.8 4		0.0025 5	$d\sigma/d\Omega=0.0017$ mb/sr 3 at 5°, 0.0025 mb/sr 4 at 17.5°.
2872.2 4		0.0016 4	$d\sigma/d\Omega=0.0009$ mb/sr 2 at 5°, 0.0012 mb/sr 3 at 17.5°.
2882.4 5		0.0032 5	$d\sigma/d\Omega=0.0017$ mb/sr 3 at 5°, 0.0052 mb/sr 7 at 17.5°.
2906.2 18		0.0029 5	$d\sigma/d\Omega=0.0026$ mb/sr 4 at 5°, 0.0059 mb/sr 8 at 17.5°.
2923.8 4		0.0191 22	$d\sigma/d\Omega=0.0179$ mb/sr 19 at 5°, 0.0186 mb/sr 21 at 17.5°.
2934.0 8		0.0065 10	$d\sigma/d\Omega=0.0070$ mb/sr 8 at 5°, 0.0077 mb/sr 10 at 17.5°.

[†] From 2008Zh05 and used for calibration in 2013Be21.

[‡] Confirmed or newly assigned from $\sigma(5^\circ)/\sigma(17.5^\circ)$ in 2013Be21.

[#] Values at 30°, E(p)=25 MeV in 2013Be21.

@ From 1978El10.

& From 1990Ve13.