^{22}Ne(d,pγ) 1974Ch35,1967Ho08

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	M. S. Basunia[#], A. Chakraborty[##]	NDS 171, 1 (2021)	1-Jun-2020

Other references: 1966Fo02, 1950Pr64.

1974Ch35: Deuteron beam with varying energies from 4.5 to 4.8 MeV using the tandem accelerator facility at Uppsala was used. Enriched ^{22}Ne gaseous target (with enrichment more than 99.9%) was used. The target material was confined in a gas cell. The emitted particles from the gas cell were detected using an annular surface barrier detector placed very close to 180 degree with respect to the initial beam direction. Large volume Ge(Li) detectors were used for detection of gamma rays. Measured pγ, $\gamma\gamma$, Eγ, DSA.

1967Ho08: Natural neon and enriched (99.9%) ^{22}Ne gas targets bombarded by deuteron beam, E=2.72, 2.85, 3.40, 3.52 MeV; NaI(Tl) and solid state detectors; Measured Eγ, γ-ray branching ratio, pγ coincidence, angular correlation measurements, $\gamma(\theta)$; Deduced spin-parity for excited levels.

^{23}Ne Levels

E(level)[†]	J$^\pi$	T$_{1/2}$[‡]	Comments
0.0	5/2$^+$		J$^\pi$: From Adopted Levels.
1017.14 *19*		178 ps *10*	T$_{1/2}$: From pγ(t) coincidence in 1966Fo02. Other: 208 ps *110* from mean lifetime of 300 ps *+150−165* (1974Ch35) by Doppler shift attenuation factor.
1702.1 *4*	3/2,7/2	<70 fs	J$^\pi$: From summed correlation results for 1702 keV transition and analysis (1967Ho08).
1822.9 *3*	3/2	<70 fs	J$^\pi$: From combined correlation results for 1822 keV transition and analysis (1967Ho08).
2315.8 *4*		<70 fs	
2518.0 *8*		<70 fs	
3221.3 *4*	3/2$^-$	<70 fs	J$^\pi$: ≠1/2 in 1967Ho08 from $\gamma(\theta)$ and correlation measurements for 1/2$^-$ and 3/2$^-$ from L=1 in (d,p) 1970Ho22.
3432.4 *5*		<70 fs	
3458.3 *6*		<70 fs	
3830.6 *10*		<70 fs	
3837.6 *9*		<70 fs	
3843.5 *11*		<70 fs	
3988.5 *6*		<70 fs	
4010 *3*		<70 fs	

[†] From least-squares fit to γ-ray energies.

[‡] Estimated by evaluator of 1978En02, on the basis of the observation that the relevant γ-rays are fully Doppler shifted as reported by 1974Ch35, except for 1017.1 keV level.

γ(^{23}Ne)

E$_\gamma$[†]	I$_\gamma$[‡]	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	Comments
492.7 *5*	154 *7*	2315.8		1822.9	3/2	I$_\gamma$: Branching: 89 *4* from 154 *7* (1974Ch35), while 100 *4* from 45 *2* (1967Ho08).
614.0 *15*	12 *4*	2315.8		1702.1	3/2,7/2	I$_\gamma$: Branching: 6.9 *23* from 15 *12* (1974Ch35), while <16 from <7 (1967Ho08).
815.8 *7*	55 *6*	2518.0		1702.1	3/2,7/2	
1017.1 *2*	1000	1017.14		0.0	5/2$^+$	
1116.5 *6*	24 *6*	3432.4		2315.8		I$_\gamma$: Branching: 6.1 *15* from 24 *6* (1974Ch35), while <17 from <9 (1967Ho08).
1298.2 *9*	29 *7*	2315.8		1017.14		I$_\gamma$: Branching: 17 *4* from 29 *7* (1974Ch35) and 22 *4* from 10 *2* (1967Ho08).
1325.5 *8*	23	3843.5		2518.0		
1398.8 *9*	39 *13*	3221.3	3/2$^-$	1822.9	3/2	I$_\gamma$: Branching: 3.2 *11* from 39 *13* (1974Ch35), while <5 from <4 (1967Ho08).

Continued on next page (footnotes at end of table)

^{22}Ne(d,pγ) 1974Ch35,1967Ho08 (continued)

$\gamma(^{23}Ne)$ (continued)

E_γ[†]	I_γ[‡]	E_i(level)	J_i^π	E_f	J_f^π	Comments
1608.8 *11*	53 *13*	3432.4		1822.9	3/2	I_γ: Branching: 13 *3* from 53 *13* (1974Ch35), while 26 *6* from 14 *3* (1967Ho08).
1635.3 *6*	96 *12*	3458.3		1822.9	3/2	
1672.6 *4*	372 *27*	3988.5		2315.8		
1702.0 *4*	68	1702.1	3/2,7/2	0.0	$5/2^+$	
1822.8 *3*	305	1822.9	3/2	0.0	$5/2^+$	
2014.7 *9*	144 *16*	3837.6		1822.9	3/2	
2128.5 *10*	76 *13*	3830.6		1702.1	3/2,7/2	
2204.0 *4*	1204 *46*	3221.3	$3/2^-$	1017.14		I_γ: Branching: 100 *4* from 1204 *46* (1974Ch35) and 100.0 *24* from 82 *2* (1967Ho08).
2315.9 *9*	174 *22*	2315.8		0.0	$5/2^+$	I_γ: Branching: 100 *13* from 174 *22* (1974Ch35) and 100 *4* from 45 *2* (1967Ho08).
2415.5 *9*	155 *25*	3432.4		1017.14		I_γ: Branching: 39 *6* from 155 *25* (1974Ch35) and 59 *11* from 32 *6* (1967Ho08).
2441.1 *10*	79 *14*	3458.3		1017.14		
2518.3 *17*	24 *10*	2518.0		0.0	$5/2^+$	
2819.9 *18*	179 *26*	3837.6		1017.14		
3220.8 *8*	300 *32*	3221.3	$3/2^-$	0.0	$5/2^+$	I_γ: Branching: 25 *3* from 300 *32* (1974Ch35) and 22.0 *24* from 18 *2* (1967Ho08).
3432.9 *13*	396 *38*	3432.4		0.0	$5/2^+$	I_γ: Branching: 100 *10* from 396 *38* (1974Ch35) and 100 *7* from 54 *4* (1967Ho08).
3830.0 *25*	13 *8*	3830.6		0.0	$5/2^+$	
3988.9 *16*	520 *54*	3988.5		0.0	$5/2^+$	
4010 *3*	135	4010		0.0	$5/2^+$	

[†] Measured using Ge(Li) detector at 90°.
[‡] Measured using Ge(Li) detector at 55°. The uncertainties were not given for gammas from levels deexciting by a single transition. Other uncertainties deduced using data in Table I of 1974Ch35.

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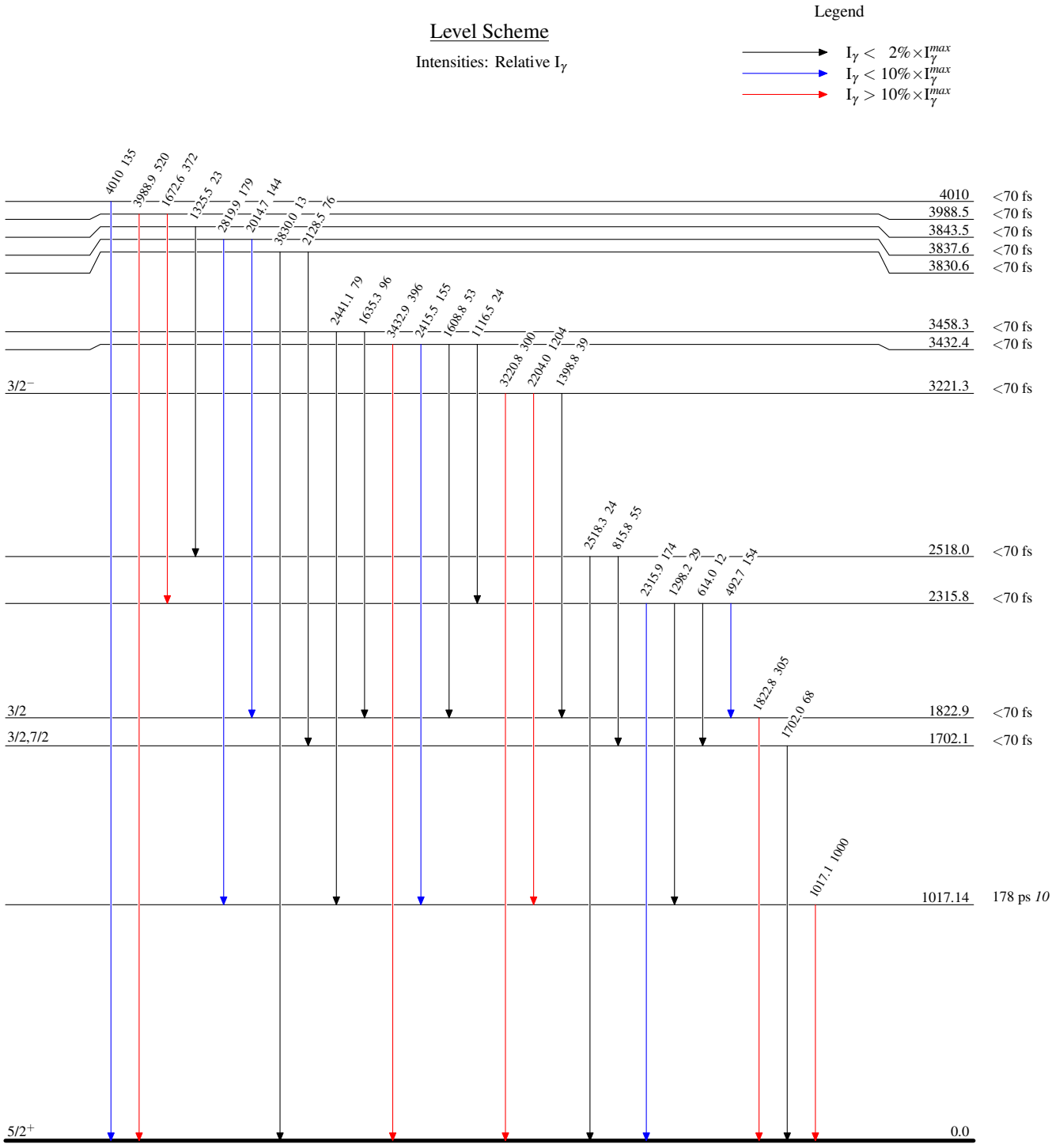
Level Scheme

Intensities: Relative I_γ



$^{23}_{10}Ne_{13}$