

$^{20}\text{Ne}({}^3\text{He},n),({}^3\text{He},n\gamma)$ 1972Ro20,1986A115,1975Gr04

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	M. Shamsuzzoha Basunia		NDS 127, 69(2015)	1-Apr-2015

$J^\pi(^{20}\text{Ne})=0^+$.

1972Ro20: $^{20}\text{Ne}({}^3\text{He},n\gamma)$, E=4.3-11.5 MeV. Enriched target, $n\gamma$ coincidence, Ge(Li), NaI(Tl), NE213 neutron detector. Measured E_γ , I_γ , $\gamma(\theta)$.

1986A115: $^{20}\text{Ne}({}^3\text{He},n)$, E=25.4 MeV. Measured n TOF, $\sigma(\text{En},\theta)$. DWBA analysis. Deduced excited level energies, L values.

1975Gr04: $^{20}\text{Ne}({}^3\text{He},n\gamma)$, E=10 MeV. Measured mean lifetime by Doppler Shift Attenuation Method. **1970Mc06:** $^{20}\text{Ne}({}^3\text{He},n)$, E=3.4-9.4 MeV. Enriched target.

Other references: **1964Br13**, **1970Mc06**, **1972Be68**, **1974Bo06**, **1975Pe11**.

^{22}Mg Levels

E(level) [†]	$T_{1/2}$ [†]	L [‡]	Comments
0.0		0	
1247.0 4	2.0 ps 8	(2)	$T_{1/2}$: Weighted average 2.9 ps 10 (1975Gr04) and 1.3 ps 9 (symmetric value of 0.7 ps +15-3 (1972Ro20) is considered by evaluator).
3308.2 9	200 fs 45	(4)	
4401.9 15	<21 fs		
5006 2	<17 ns		E(level): 2005Se02 ($^{12}\text{C},2n\gamma$) and 2001Ba17 (p,t) conclude this level does not exist. See comments for 604.4 γ . Level not adopted.
5037.0 14	<0.07 ns	2	
5290 2	44 fs 15		
5317 5	<17 ns	(4)	
5464 5	<0.07 ns		
5714.4 15	28 fs 10	2	
5837 5	<17 ns		
5980 [‡] 30		0	
6298 50	<17 ns	4	E(level): From 1972Ro20 . Other value: 6263 20 (1970Mc06).
6573 20			E(level): From 1970Mc06 .
6770 [‡] 20		3	E(level): From 1970Mc06 . Other value: 6760 90 (1972Ro20).
6980 [‡] 80		3	
7201 [‡] 20		0	E(level): From 1970Mc06 . Other value: 7230 100 (1972Ro20).
7840 [‡] 90			
7.89×10^3 [‡] 10			
8290 [‡] 40			
8550 [‡] 90			

[†] From **1972Ro20**, except as noted.

[‡] From **1986A115**.

$\gamma(^{22}\text{Mg})$

$E_i(\text{level})$	E_γ [†]	I_γ [†]	E_f	Mult. [‡]	δ	Comments
1247.0	1247.0 4	100	0.0	Q		$A_2=+0.48$ 10, $A_4=-0.60$ 15 (1972Ro20).
3308.2	2061.2 8	100	1247.0	Q		$A_2=+0.59$ 9, $A_4=-0.47$ 15 (1972Ro20).
4401.9	1090 50	6 5	3308.2			
	3154.9 14	100 5	1247.0	D+Q	+0.8 7	$A_2=+0.46$ 14, $A_4=+0.56$ 27 (1972Ro20).
	4400 50	9 5	0.0			
5006	604.6 18	100	4401.9			E_γ : not observed in other reaction studies.
5037.0	3790.0 13	100 5	1247.0	D+Q	+0.08 15	$A_2=+0.56$ 8, $A_4=-0.06$ 14 (1972Ro20).

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$^{20}\text{Ne}({}^3\text{He},n),({}^3\text{He},n\gamma)$ 1972Ro20,1986A115,1975Gr04 (continued) $\gamma(^{22}\text{Mg})$ (continued)

$E_i(\text{level})$	E_γ^\dagger	I_γ^\dagger	E_f	Mult. ‡	δ	Comments
5037.0	5037 6	14 5	0.0			
5290	890.5 10	67 17	4401.9			E_γ : In Adopted Gammas – placement from a different level (5296 keV).
	1980 2	100 17	3308.2			
5317	4070 5	100 21	1247.0			
	5317 6	43 21	0.0			
5464	2160 4	43 14	3308.2			
	4214 4	100 14	1247.0			
5714.4	4466.4 13	100 3	1247.0	D+Q	-0.17 10	$A_2=+0.15$ 11, $A_4=-0.09$ 15 (1972Ro20).
	5717 4	15 3	0.0			$A_2=+0.2$ 3, $A_4=+0.4$ 4 (1972Ro20).
5837	2530 45	25 19	3308.2			
	4590 5	100 19	1247.0			

† From 1972Ro20.

‡ From angular distribution coefficients.

$^{20}\text{Ne}(^3\text{He},n),(^3\text{He},n\gamma)$ 1972Ro20,1986Al15,1975Gr04

Level Scheme

Intensities: Relative photon branching from each level

