^{167}Er(d,p), (t,d) 1996Ma50,1985Bu12

History			
Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Coral M. Baglin	NDS 111, 1807 (2010)	15-Jun-2010

Others: 1963Is01, 1967Ha25, 1988Ma12.
$J^\pi(^{167}Er)=7/2^+$.
The band assignments are from 1985Bu12.
1996Ma50: E(d)= 22 MeV; enriched ^{167}Er target; Q3d magnetic spectrograph with multiwire proportional counter, FWHM≈6 keV; θ(lab)=15°, 30°, 40°; measured E(d′), dσ/d$\Omega(\theta)$; DWBA calculations. Observed 78 levels. see also 1988Ma12, which is presumably superseded by the publication by 1996Ma50.
1988Ma12 (incomplete conference report): E(d)=15, 22 MeV, θ(lab)=30°; measured E(level) (Q3D mag spect, average resolution 3.5 keV). the authors of this study are identical to those for 1996Ma50; the evaluator assumes that this is a preliminary report of the study presented In 1996Ma50.
1985Bu12: E(d)=12 MeV; θ=6° to 90° (15 angles). E(t)=15 MeV; θ=6° to 75° (11 angles). Isotope-separated enriched targets (≥99% ^{167}Er); measured E(level) (mag spect, FWHM: 8-10 for (d,p), 10-12 for (t,d)), angular distributions, differential cross sections; used Nilsson calculations incorporating effects of pairing and Coriolis mixing to describe the two-quasineutron configurations populated.
1967Ha25 report additional levels up to 4200; however, because of poor agreement with known results for the overlapping energy regions, no levels are listed from 1967Ha25.

^{168}Er Levels

Band(giy) $K^\pi=3^-$ band. Configuration: 7/2[633]−1/2[521] (1985Bu12).
Band(ez) $K^\pi=1^-$ band. Configuration: 7/2[633]−5/2[512] (1985Bu12).

E(level)[†]	J$^\pi$[‡]	S(d,p)[#]	S(t,d)[@]	Comments
78[e]	2^+	≈1.67	1.56	E(level): from 1985Bu12.
262[e]	4^+	0.93	1.11	E(level): from 1985Bu12.
547[e]	6^+	0.81	0.79	E(level): from 1985Bu12.
820[k]	2^+			E(level): from 1985Bu12.
896[ak]	3^+			
(928.3[be])	8^+	≤0.71	≤0.43	
995[ak]	4^+			
1093.8[g] 4	4^-	0.77	0.70	
1193.5[g] 4	5^-	0.61	0.62	
1276.3[p] 5	2^+	≈1.59	1.25	
1311.5[g] 4	6^-	0.89	0.89	
1359.0 4	1^-	0.88	0.70	
1403.8 4	$(2)^-$	1.03	0.81	
1411.4 4	4^+			
1431.5 4	3^-	0.74	0.69	
1449.6[g] 4	7^-	1.23	0.99	
(1493.1[bf])	2^+	≤0.28	≤0.16	
1542	$(4)^-$			E(level): from 1988Ma12.
1542.1[i] 3	3^-	1.11	0.95	
≈1565[l]	$(2)^-$	[c]		E(level): from 1985Bu12.
1573.3 4	5^-	[c]	≤0.87	
1615.9[i] 3	4^-	0.92	0.76	
1632.5[l] 4	3^-			
(1656.3[bf])	$(4)^+$	≤0.29	≤0.17	
1708.1 3	5^-	[d]	≤0.88	

Continued on next page (footnotes at end of table)

^{167}Er(d,p), (t,d) 1996Ma50,1985Bu12 (continued)

^{168}Er Levels (continued)

E(level)[†]	Jπ[‡]	S(d,p)[#]	S(t,d)[@]	Comments
1719.2 *4*	4⁻	*d*		
1764.0 *4*		≈1.94	&	other E: 1761 *3* (1985Bu12).
1773.9[h] *3*	(6)⁻	0.91	≈0.82	
1786.0[m] *4*	1⁻			
1795	(7⁻)			E(level): from 1988Ma12.
1820.5 *3*	6⁻	≤1.60	&	
1828.2[j] *3*	3⁻	0.26	0.30	
1892[j]	(4)⁻	≤0.34		E(level): from 1988Ma12.
1895.8[h] *4*	(7)⁻	≤1.78	≤1.94	E(level): from 1988Ma12.
1904.8 *4*	(4)⁻			
1914.0 *4*	3⁻			
1939[n]	1⁻			E(level): from 1985Bu12.
1950.8 *4*	7⁻	≤1.22	≤0.85	
1983.6[j] *4*	5⁻	0.12	0.11	
2002.4 *10*				
2019[n]	(3)⁻			E(level): from 1985Bu12.
2038.7[h] *10*	(8⁻)	≤0.99	0.69	
2059.7[i] *10*	(4)⁻	0.34	0.29	
2090.9[j] *10*	(6)⁻	≤0.45	≤0.35	
2102.1[n] *10*	4⁻			
2108[o]	(5)⁺			E(level): from 1985Bu12.
2120.1 *10*	(6)⁻			
2127.6 *11*				E(level): composite peak corresponding to adopted 2118.8, 2122.4, and 2129.2 levels; 1985Bu12 report 2121 and 2127 in (d,p) and≈2123 in (t,d).
≈2136				E(level): from 1985Bu12.
2148.4 *10*	5⁻	0.37	0.39	
≈2186				E(level): from 1985Bu12.
2204	(5)⁻			E(level): from 1985Bu12.
2210[j]	(7⁻)			E(level): from 1988Ma12.
2221				E(level): from 1985Bu12.
2230.8 *10*	(2)⁻			
2239.5 *11*	(4)⁺			
2244.3 *10*	(3)⁺			
2255.7[i] *10*	(6)⁻	≤0.58	≤0.63	
2267.3 *10*	(3,4,5)⁺			
≈2274	(2⁺,3,4⁺)			E(level): from 1985Bu12.
2294.0 *10*				
2302.0 *10*				
2311.1 *11*	(4)⁺			
2322.6 *10*				
≈2330	6⁻			E(level): from 1985Bu12.
2336.7 *10*				
2347.1 *10*				
2364.7 *10*				
2371.6 *10*	2,3			
2380.2 *10*	(2)⁺			
2392.1 *10*				
2400.1 *10*				
2411.2 *10*	(5)⁺			other E: 2417 (1985Bu12).
2434.9 *10*				E(level): 2441 *3* In 1985Bu12; May Be for 2435+2451 doublet.
2450.5 *10*				
2460				E(level): from 1985Bu12.
2476.4 *10*				

Continued on next page (footnotes at end of table)

^{167}Er(d,p), (t,d) 1996Ma50,1985Bu12 (continued)

^{168}Er Levels (continued)

E(level)†	Jπ‡	E(level)†	E(level)†	E(level)†
2484.4 *12*		2562.2 *10*	2646.2 *10*	2727.9 *10*
2497.8 *10*		2569.0 *10*	2656.3 *10*	2739.6 *10*
2510.8 *10*	$1^{(-)}$	2584.8 *10*	2663.1 *10*	2746.3 *10*
2517.6 *10*	$(3^+,4^+)$	2594.4 *10*	2678.1 *10*	2755.8 *10*
2527.2 *10*		2603.7 *10*	2691.8 *10*	
2539.3 *10*		2626.3 *10*	2703.2 *10*	
2553.1 *10*		2637.2 *10*	2711.9 *11*	

† From 1996Ma50, except As noted. Systematic uncertainties of 0.33 keV for E<2000 or 1.0 keV for E>2000 have been combined In quadrature with the statistical uncertainties given In table 3 of 1996Ma50. 1996Ma50 note that the systematic uncertainty May exceed 1 keV for E>2500. average energies from all angles from (d,p) and (t,d) In 1985Bu12 (uncertainties≤3 keV for strongly-populated, well-resolved states) are In excellent agreement for resolved peaks.

‡ Adopted values.

Configuration strength from 1985Bu12 for (d,p) (=dσ/dΩ(exp, θ=60°)/N dσ/dΩ(theory), N=1.50).

@ Configuration strength from 1985Bu12 for (t,d) (=dσ/dΩ(exp, θ=40°)/N dσ/dΩ(theory), N=5.06).

& Peak obscured in (t,d).

a From 1985Bu12. Observed in (t,d) only.

b Adopted value (rounded); level not observed in (d,p) or (t,d), but 1985Bu12 set limits for configuration strengths.

c Configuration strength (d,p)≤1.2 for 1565+1574 doublet in 1985Bu12.

d Configuration strength (d,p)=0.83 for 1709+1720 doublet in 1985Bu12.

e Band(A): $K^\pi=0^+$ g.s. band.

f Band(B): $K^\pi=0^+$ band.

g Band(C): $K^\pi=4^-$ band. Configuration: 7/2[633]+1/2[521] (1985Bu12).

h Band(D): $K^\pi=6^-$ band. Configuration: 7/2[633]+5/2[512] (1985Bu12).

i Band(E): $K^\pi=4^-$ band. Configuration: 7/2[633]+1/2[510] (1985Bu12).

j Band(F): $K^\pi=3^-$ band. Configuration: 7/2[633]−1/2[510] (1985Bu12).

k Band(G): $K^\pi=2^+$ γ-vibration band.

l Band(H): $K^\pi=2^-$ octupole band.

m Band(I): $K^\pi=0^-$ band.

n Band(J): $K^\pi=1^-$ band.

o Band(K): $K^\pi=2^+$ band.

p Band(L): $K^\pi=0^+$ band.

^{167}Er(d,p), (t,d) 1996Ma50,1985Bu12

Band(A): $K^{\pi}=0^{+}$ g.s. band

8^{+}	928.3
6^{+}	547
4^{+}	262
2^{+}	78

Band(B): $K^{\pi}=0^{+}$ band

$(4)^{+}$	1656.3
2^{+}	1493.1

Band(C): $K^{\pi}=4^{-}$ band

7^{-}	1449.6
6^{-}	1311.5
5^{-}	1193.5
4^{-}	1093.8

Band(D): $K^{\pi}=6^{-}$ band

(8^{-})	2038.7
$(7)^{-}$	1895.8
$(6)^{-}$	1773.9

Band(E): $K^{\pi}=4^{-}$ band

$(6)^{-}$	2255.7
$(4)^{-}$	2059.7
4^{-}	1615.9
3^{-}	1542.1

Band(F): $K^{\pi}=3^{-}$ band

(7^{-})	2210
$(6)^{-}$	2090.9
5^{-}	1983.6
$(4)^{-}$	1892
3^{-}	1828.2

$^{168}_{68}Er_{100}$

^{167}Er(d,p), (t,d) 1996Ma50,1985Bu12 (continued)

Band(J): $K^\pi=1^-$ band

4^-	2102.1
$(3)^-$	2019
1^-	1939

Band(K): $K^\pi=2^+$ band

$(5)^+$	2108

Band(I): $K^\pi=0^-$ band

1^-	1786.0

Band(H): $K^\pi=2^-$ octupole band

3^-	1632.5
$(2)^-$	≈1565

Band(L): $K^\pi=0^+$ band

2^+	1276.3

Band(G): $K^\pi=2^+$ γ-vibration band

4^+	995
3^+	896
2^+	820

$^{168}_{68}Er_{100}$