^{191}Ir(d,t) 1995Ga04

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh, [1] and Jun Chen[2]	NDS 169, 1 (2020)	15-Oct-2020

$J^{\pi}(^{191}\text{Ir g.s.})=3/2^{+}$.

1995Ga04: E=18 MeV deuteron beam was produced from the model FN tandem Van de Graaff accelerator at McMaster University. Targets were 94.7% or 96.2% enriched ^{191}Ir with thicknesses of 30 and 45 μg/cm^2, respectively, on carbon foils. Reaction products were momentum-analyzed with an Enge split-pole magnetic spectrograph (FWHM=5.7 keV) and detected with photographic plates. Measured $\sigma(E_t,q)$ at 16 angles from 6° to 70°. Deduced levels, J, π, L-transfers, spectroscopic strengths. Comparisons with Nilsson-model predictions.

Q value for lowest energy state populated=−1769.3 *4* deduced by 1995Ga04 using the Q-value=−1514.6 *2* for ^{193}Ir(d,t) (based on S(n)=7771.85 *20* in 1993Au07 evaluation, the present value is S(n)=7771.99 *20* in 2017Wa10) and the measured energy difference between the lowest levels populated in ^{190}Ir and ^{192}Ir, respectively.

All data are from 1995Ga04.

Additional information 1.

Cross section (μb/sr) at θ=45

Energy	σ	Energy	σ
0	74 *9*	655.3	25 *4*
25.9	176 *19*	669.0	73 *10*
38.1	23 *4*	684.7	150 *17*
83.0	560 *70*	705.2	21 *4*
144.0	37 *5*	722.1	75 *10*
173.8	260 *60*	743.5	92 *10*
183.2	90 *12*	755.7	39 *6*
198.9	140 *16*	772.5	29 *5*
223.4	477 *50*	787.5	36 *5*
241.7	13 *3*	794.9	16 *4*
266.8	121 *14*	806.2	18 *3*
278.9	119 *15*	823.6	24 *5*
284.9	49 *10*	835.9	19 *4*
313.4	97 *15*	843.5	32 *6*
331.7	52 *5*	862.0	14 *4*
347.8	282 *30*	902.1	11 *3*
366.7	106 *15*	929.4	47 *5*
375.7	39 *8*	960.1	20 *4*
408.0	29 *4*	971.2	22 *5*
426.7	48 *6*	993.2	51 *7*
441.7	72 *10*	1006.4	15 *3*
452.3	16 *6*	1014.8	15 *3*
478.5	84 *11*	1026.8	30 *5*
485.8	210 *23*	1034.4	17 *3*
496.4	144 *15*	1062.9	11 *3*
510.9	188 *21*	1082.8	8 *3*
542.5	36 *5*	1092.4	13 *3*
589.3	256 *47*	1115.6	10 *3*
602.7	194 *21*	1135.9	6 *4*
612.8	155 *17*	1143.0	13 *5*
619.1	42 *6*		
633.0	15 *4*		

^{191}Ir(d,t) 1995Ga04 (continued)

^{190}Ir Levels

E(level)	J^{π}[†]	L[c]	S[d]	Comments
0[‡]	4^-	3+(1)	0.100 *8*	S: <0.004 for L=1. Possible configuration=ν9/2[505]-π1/2[400].
25.9[@] *1*	$(1)^-$	1	0.089 *3*	Configuration=π3/2[402]-ν1/2[510].
38.1[‡] *2*	$(3)^-$	5	0.325 *24*	Configuration=ν9/2[505]-π3/2[402].
83.0[@] *1*	$(2)^-$&$(3)^-$	1+3	0.224 *14*	S: 0.22 *6* for L=3. E(level): proposed to be a doublet. Configuration=π3/2[402]-ν1/2[510], $K^{\pi}=1^-$ and configuration=π3/2[402]+ν3/2[512] for a proposed doublet.
144.0[b] *2*	$(1)^-$	1	0.019 *1*	Configuration=ν3/2[512]-π1/2[400].
173.8[#a] *2*	$(1)^-$	1+3	0.048 *4*	S: 0.32 *3* for L=3. Configuration=π3/2[402]-ν3/2[512], $K^{\pi}=0^-$.
183.2[a] *4*	$(0)^-$	1	0.045 *2*	Configuration=π3/2[402]-ν3/2[512].
198.9 *2*		1+3	0.062 *4*	S: 0.044 *18* for L=3.
223.4[&] *2*	$(2)^-$	1+3	0.187 *12*	S: 0.31 *5* for L=3. E(level): unresolved doublet. Configuration=π1/2[400]+ν3/2[512] and configuration=π3/2[402]+ν1/2[510] for two components.
241.7 *6*		1+3	0.005 *1*	S: 0.010 *4* for L=3.
266.8 *3*		1	0.074 *2*	
278.9 *3*		1+3	0.039 *4*	S: 0.088 *18* for L=3.
284.9[b] *3*	$(2)^-$	1+3	0.021 *4*	S: 0.020 *13* for L=3. Configuration=ν3/2[512]-π1/2[400]; $K^{\pi}=1^-$.
313.4[a] *4*	$(2)^-$	1+3	0.018 *2*	S: 0.134 *13* for L=3. Possible configuration=π3/2[402]-ν3/2[512], $K^{\pi}=0^-$.
331.7 *4*		3	0.089 *4*	
347.8[&] *4*	(3^-)	1+3	0.121 *8*	S: 0.12 *3* for L=3. Possible configuration=π3/2[402]+ν1/2[510], $K^{\pi}=2^-$.
366.7 *4*		1+3	0.021 *2*	S: 0.130 *14* for L=3.
375.7 *4*		1	0.021 *1*	
408.0 *4*		1+3	0.006 *1*	S: 0.039 *5* for L=3.
426.7 *4*		1	0.027 *1*	
441.7[‡] *5*	$(6)^-$	5+(3)	0.87 *11*	S: <0.038 for L=3. Possible configuration=ν9/2[505]-π3/2[402].
452.3 *6*				L: $\sigma(\theta)$ does not fit any L value. S: <0.003 for L=1, <0.006 for L=3, <0.024 for L=5.
478.5 *5*		3	0.166 *8*	
485.8 *5*		1	0.140 *5*	
496.4 *5*		1	0.096 *3*	
510.9 *5*		1	0.128 *4*	
542.5 *7*		3+5	0.033 *5*	S: 0.23 *6* for L=5.
589.3 *6*		1	0.157 *5*	
602.7[‡] *6*		3+(1)	0.71 *3*	S: <0.007 for L=1.
612.8 *7*		1	0.036 *2*	
619.1 *7*		1	0.098 *4*	
633.0 *7*		1	0.027 *1*	
655.3 *7*		1	0.019 *1*	
669.0 *7*		1+3	0.017 *2*	S: 0.123 *11* for L=3.
684.7 *7*		1	0.105 *4*	
705.2 *8*		1+3	0.011 *1*	S: 0.017 *6* for L=3.
722.1 *7*		1	0.044 *2*	
743.5 *7*		1	0.053 *2*	
755.7 *8*		1+3	0.020 *2*	S: 0.030 *9* for L=3.
772.5[‡] *11*		5+(1)	0.34 *5*	S: <0.007 for L=1.

Continued on next page (footnotes at end of table)

^{191}Ir(d,t) 1995Ga04 (continued)

^{190}Ir Levels (continued)

E(level)	L[c]	S[d]	Comments
787.5 *9*	1	0.020 *1*	
794.9 *9*	1	0.013 *1*	
806.2 *9*	1+3	0.004 *1*	S: 0.014 *4* for L=3.
823.6 *9*	1+3	0.006 *1*	S: 0.035 *5* for L=3.
835.9 *9*	1+3	0.011 *1*	S: 0.020 *7* for L=3.
843.5 *9*	1+3	0.009 *1*	S: 0.053 *7* for L=3.
862.0 *10*	1+3	0.004 *1*	S: 0.012 *1* for L=3.
902.1 *10*	3	0.025 *2*	
929.4 *10*	1+3	0.020 *2*	S: 0.052 *10* for L=3.
960.1 *10*	1+3	0.011 *2*	S: 0.011 *6* for L=3.
971.2 *10*	1+3	0.006 *1*	S: 0.037 *6* for L=3.
993.2 *11*	1+3	0.008 *1*	S: 0.123 *9* for L=3.
1006.4 *14*	1+3	0.007 *1*	S: 0.015 *5* for L=3.
1014.8 *14*	1	0.008 *1*	
1026.8 *14*	1+3	0.006 *1*	S: 0.047 *6* for L=3.
1034.4 *16*	3	0.047 *3*	
1062.9 *18*			
1082.8 *12*			
1092.4 *15*			
1115.6 *17*			
1135.9 *19*			
1143.0 *18*			

† From comparison of observed and predicted (DWBA) strengths (1995Ga04).
‡ Peak may have an impurity contribution.
# Possibly unresolved doublet.
@ $K^\pi=1^-$ band (1995Ga04). Configuration=$\pi 3/2[402]$-$\nu 1/2[510]$.
& Possible $K^\pi=2^-$ band (1995Ga04). Configuration=$\pi 3/2[402]+\nu 1/2[510]$.
a $K^\pi=0^-$ band (1995Ga04). Configuration=$\pi 3/2[402]$-$\nu 3/2[512]$.
b $K^\pi=1^-$ band (1995Ga04). Configuration=$\nu 3/2[512]$-$\pi 1/2[400]$.
c From comparison of $\sigma(\theta)$ data with DWBA calculations.
d For first L-transfer in cases of mixed transfers. Value for the other L transfer is given under comments.