

<sup>250</sup>Cf(d,p) 2009Ah03,1990Ah02

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	C. Morse	NDS 189,111 (2023)	23-Sep-2022

2009Ah03: E(d)=12.0 MeV, original data presented in their earlier paper 1990Ah02, where they measured scattered protons using an Enge split-pole spectrograph with an energy resolution of FWHM= 7 keV. DWBA analysis and band assignments are presented in 2009Ah03.

<sup>251</sup>Cf Levels

dσ/dΩ values listed under comments are for θ=90°. Corresponding values at 120° are also given in 2009Ah03.

E(level)	J <sup>π</sup>	(dσ/dΩ) <sub>exp</sub> /(dσ/dΩ) <sub>theory</sub> . <sup>†</sup>	Comments
0 <sup>@</sup>	1/2 <sup>+</sup>	1.46 7	configuration=ν1/2 <sup>+</sup> [620] (2009Ah03) dσ/dΩ=278 μb/sr 13.
24 <sup>@</sup>	3/2 <sup>+</sup>	0.61 11	dσ/dΩ=17 μb/sr 3.
48 <sup>@</sup>	5/2 <sup>+</sup>	0.94 5	dσ/dΩ=133 μb/sr 7.
106 <sup>@</sup>	7/2 <sup>+</sup>	1.37 11	dσ/dΩ=50 μb/sr 4.
146 <sup>@</sup>	9/2 <sup>+</sup>	0.85 10	dσ/dΩ=34 μb/sr 4.
166	9/2 <sup>+</sup>	0.97 6	configuration=ν7/2 <sup>+</sup> [613] (2009Ah03) dσ/dΩ=142 μb/sr 8.
177 <sup>&amp;</sup>	3/2 <sup>+</sup>	0.97 5	configuration=ν3/2 <sup>+</sup> [622] (2009Ah03) dσ/dΩ=125 μb/sr 6.
212 <sup>&amp;</sup>	5/2 <sup>+</sup>	1.26 19	dσ/dΩ=88 μb/sr 13.
240 <sup>@</sup>	11/2 <sup>+</sup>	2.1 9	dσ/dΩ=3.6 μb/sr 15.
258 <sup>&amp;</sup>	7/2 <sup>+</sup>	0.97 8	dσ/dΩ=63 μb/sr 5.
292 <sup>@</sup>	13/2 <sup>+</sup>	≈3.8 <sup>‡</sup>	dσ/dΩ≈3 μb/sr at 120°.
318 <sup>&amp;</sup>	9/2 <sup>+</sup>	1.91 17	dσ/dΩ=56 μb/sr 5.
544 <sup>a</sup>	5/2 <sup>+</sup>	3.5 8	configuration=ν5/2 <sup>+</sup> [622] (2009Ah03) dσ/dΩ=9 μb/sr 2.
569	15/2 <sup>-</sup>	5.3 10	configuration=ν11/2 <sup>-</sup> [725] (2009Ah03) dσ/dΩ=21 μb/sr 4.
600 <sup>b</sup>	3/2 <sup>-</sup>	1.25 5	dσ/dΩ=269 μb/sr 10.
625 <sup>b</sup>	7/2 <sup>-</sup>	1.99 8	dσ/dΩ=278 μb/sr 10.
632 <sup>b</sup>	1/2 <sup>-</sup>	2.6 3	configuration=ν1/2 <sup>-</sup> [750] (2009Ah03) dσ/dΩ=99 μb/sr 10.
649 <sup>a</sup>	9/2 <sup>+</sup>	4.1 10	dσ/dΩ=22 μb/sr 5.
683 <sup>c</sup>	9/2 <sup>+</sup>	5.3 8	configuration=ν9/2 <sup>+</sup> [615] (2009Ah03) dσ/dΩ=69 μb/sr 10.
691 <sup>b</sup>	11/2 <sup>-</sup>	6.9 12	dσ/dΩ=58 μb/sr 10.
708 <sup>b</sup>	5/2 <sup>-</sup>	0.82 21	dσ/dΩ=12 μb/sr 3.
729 <sup>#</sup>			
758 <sup>c</sup>	11/2 <sup>+</sup>	3.0 4	dσ/dΩ=36 μb/sr 4.
775 <sup>b</sup>	15/2 <sup>-</sup>	≈4	dσ/dΩ≈2 μb/sr.
858 <sup>#</sup>			
972	9/2 <sup>+</sup>	0.64 5	configuration=ν9/2 <sup>+</sup> [604] (2009Ah03) dσ/dΩ=126 μb/sr 10.
984 <sup>#</sup>			
1015 <sup>#</sup>			
1050 <sup>#</sup>			

Continued on next page (footnotes at end of table)

$^{250}\text{Cf}(\text{d,p})$  **2009Ah03,1990Ah02 (continued)** $^{251}\text{Cf}$  Levels (continued)

E(level)	$J^\pi$	$(d\sigma/d\Omega)_{\text{exp}}/(d\sigma/d\Omega)_{\text{theory}}^\dagger$	Comments
1061 <sup>#</sup>			
1088 <sup>#</sup>			
1146 <sup>#</sup>			
1183 <sup>d</sup>	7/2 <sup>-</sup>	0.99 7	configuration= $\nu 3/2^-$ [752] (2009Ah03) $d\sigma/d\Omega=150 \mu\text{b/sr}$ 10.
1222 <sup>#</sup>			
1250 <sup>e</sup>	1/2 <sup>-</sup>	0.43 6	configuration= $\nu 1/2^-$ [761] (2009Ah03) $d\sigma/d\Omega=22 \mu\text{b/sr}$ 3. $d\sigma/d\Omega=112 \mu\text{b/sr}$ 10.
1262 <sup>e</sup>	5/2 <sup>-</sup>	1.28 12	$d\sigma/d\Omega=112 \mu\text{b/sr}$ 10.
1304 <sup>d</sup>	11/2 <sup>-</sup>	4.4 4	$d\sigma/d\Omega=61 \mu\text{b/sr}$ 5.
1326 <sup>e</sup>	9/2 <sup>-</sup>	6.1 7	$d\sigma/d\Omega=63 \mu\text{b/sr}$ 7.
1335 <sup>e</sup>	3/2 <sup>-</sup>	2.9 6	$d\sigma/d\Omega=15 \mu\text{b/sr}$ 3.
1374 <sup>#</sup>			

<sup>†</sup> Values for 90°, unless otherwise stated. 2009Ah03 also give values at 120°. The  $d\sigma/d\Omega(\text{theory})=3.1[\sigma(\text{DW})/(2J+1)]U_{\text{K}}^2 c_{\text{JK}}^2$ .

<sup>‡</sup> At 120°.

<sup>#</sup> Proton group present in Figure 1 or Figure 2 of 1990Ah02 but not assigned to any configuration.

@ Band(A):  $\nu 1/2^+$  [620].

& Band(B):  $\nu 3/2^+$  [622].

<sup>a</sup> Band(C):  $\nu 5/2^+$  [622].

<sup>b</sup> Band(D):  $\nu 1/2^-$  [750].

<sup>c</sup> Band(E):  $\nu 9/2^+$  [615].

<sup>d</sup> Band(F):  $\nu 3/2^-$  [752].

<sup>e</sup> Band(G):  $\nu 1/2^-$  [761].

$^{250}\text{Cf}(\text{d,p})$  2009Ah03,1990Ah02

		<b>Band(F): <math>\nu 3/2^-</math> [752]</b>
		<u>11/2<sup>-</sup> 1304</u>
		 <u>7/2<sup>-</sup> 1183</u>
	<b>Band(D): <math>\nu 1/2^-</math> [750]</b>	<b>Band(E): <math>\nu 9/2^+</math> [615]</b>
	<u>15/2<sup>-</sup> 775</u>	<u>11/2<sup>+</sup> 758</u>
	 <u>5/2<sup>-</sup> 708</u>	
	<u>11/2<sup>-</sup> 691</u>	<u>9/2<sup>+</sup> 683</u>
	<b>Band(C): <math>\nu 5/2^+</math> [622]</b>	
	<u>9/2<sup>+</sup> 649</u>	
	 <u>1/2<sup>-</sup> 632</u>	
	<u>7/2<sup>-</sup> 625</u>	
	<u>3/2<sup>-</sup> 600</u>	
	 <u>5/2<sup>+</sup> 544</u>	
	<b>Band(B): <math>\nu 3/2^+</math> [622]</b>	
<b>Band(A): <math>\nu 1/2^+</math> [620]</b>	<u>9/2<sup>+</sup> 318</u>	
<u>13/2<sup>+</sup> 292</u>		
	 <u>7/2<sup>+</sup> 258</u>	
<u>11/2<sup>+</sup> 240</u>		
	 <u>5/2<sup>+</sup> 212</u>	
	 <u>3/2<sup>+</sup> 177</u>	
<u>9/2<sup>+</sup> 146</u>		
 <u>7/2<sup>+</sup> 106</u>		
 <u>5/2<sup>+</sup> 48</u>		
<u>3/2<sup>+</sup> 24</u>		
<u>1/2<sup>+</sup> 0</u>		

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$^{250}\text{Cf}(\text{d,p})$  2009Ah03,1990Ah02 (continued)

Band(G):  $\nu 1/2^-$  [761]

$3/2^-$  1335

$9/2^-$  1326

$5/2^-$  1262

$1/2^-$  1250

$^{251}_{98}\text{Cf}_{153}$