

$^{116}\text{Cd}(^{11}\text{B},\text{p}3\text{n}\gamma)$  1996B112

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Jun Chen	NDS 174, 1 (2021)	15-Apr-2021

1996B112: E=53, 55, and 57 MeV  $^{11}\text{B}$  beams were produced from the XTU tandem accelerator of the Laboratori Nazionali di Legnaro. Target was 1 mg/cm<sup>2</sup> isotopically enriched  $^{116}\text{Cd}$  on a 15 mg/cm<sup>2</sup> gold backing.  $\gamma$  rays were detected with the GASP array of 40 large volume Compton-suppressed Ge detector and an inner ball of 80 BGO counters. Measured  $E\gamma$ ,  $\gamma\gamma$ -coin,  $\gamma\gamma(\text{DCO})$ . Deduced levels, J,  $\pi$ , band structures, configurations. The authors mention that information on transition multipolarities was derived from DCO ratios, but no details are given.

 $^{123}\text{Te}$  Levels

E(level) <sup>†</sup>	J $\pi$ <sup>‡</sup>	Comments
247 <sup>#c</sup>	11/2 <sup>-</sup>	Additional information 1.
887.0 <sup>@c 9</sup>	15/2 <sup>-</sup>	
920.0 <sup>9</sup>	13/2 <sup>-</sup>	
1553.0 <sup>10</sup>	17/2 <sup>-</sup>	
1611.0 <sup>&amp;c 12</sup>	19/2 <sup>-</sup>	
1931.0 <sup>d 12</sup>	21/2 <sup>-</sup>	
2358.9 <sup>b 18</sup>		
2359.1 <sup>ac 13</sup>	23/2 <sup>-</sup>	
2685.0 <sup>13</sup>		
2813.9 <sup>e 15</sup>	23/2	
3039.8 <sup>d 13</sup>	25/2 <sup>-</sup>	
3377.6 <sup>c 14</sup>	27/2 <sup>-</sup>	
3552.9 <sup>e 16</sup>	27/2	
3813.9 <sup>14</sup>		
4113.8 <sup>d 14</sup>	29/2 <sup>-</sup>	
4202.8 <sup>e 16</sup>	31/2	
4254.7 <sup>c 15</sup>	31/2 <sup>-</sup>	
4359?		
4628.8 <sup>d 15</sup>	33/2 <sup>-</sup>	
4749.8 <sup>e 19</sup>		
5010.7 <sup>c 16</sup>	35/2 <sup>-</sup>	
5035.8 <sup>e 22</sup>		
5566.7 <sup>d 19</sup>	37/2	
5589.7 <sup>19</sup>		
5645.7 <sup>c 19</sup>		
5953.7 <sup>19</sup>		
6275.8 <sup>e 24</sup>		
6559.7 <sup>22</sup>		
6913.7 <sup>c 22</sup>		
7063.7 <sup>24</sup>		
7091 <sup>e 3</sup>		
7297 <sup>3</sup>		
7485 <sup>e</sup>		
8033 <sup>c</sup>		

<sup>†</sup> From a least-squares fit to  $\gamma$ -ray energies, assuming  $\Delta E\gamma=1$  keV.

<sup>‡</sup> Proposed by 1996B112 based on measured  $\gamma\gamma(\text{DCO})$ , band structures and known assignments of low-lying states. But no details on  $\gamma\gamma(\text{DCO})$  and multipolarities are given in 1996B112. When considered in Adopted Levels, those assignments are placed inside parenthesis by the evaluator if there are no other experimental evidence.

$^{116}\text{Cd}(^{11}\text{B},\text{p}3\text{n}\gamma)$  **1996B112** (continued)

$^{123}\text{Te}$  Levels (continued)

- # Configuration= $\nu\text{h}_{11/2}$ .
- @  $\nu\text{h}_{11/2}$  coupled to  $2^+$ .
- &  $\nu\text{h}_{11/2}$  coupled to  $4^+$ .
- <sup>a</sup>  $\nu\text{h}_{11/2}$  coupled to  $6^+$ .
- <sup>b</sup> This level is proposed to be a different level from the 2359,  $23/2^-$  level by **1996B112**.
- <sup>c</sup> Band(A): Band based on  $11/2^-$ .
- <sup>d</sup> Seq.(B): Sequence based on  $21/2^-$ . Configuration= $\pi\text{g}_{7/2}^2\nu\text{h}_{11/2}$  or  $\pi\text{g}_{7/2}\text{d}_{5/2}\nu\text{h}_{11/2}$ .
- <sup>e</sup> Seq.(C): Sequence based on  $23/2^-$ .

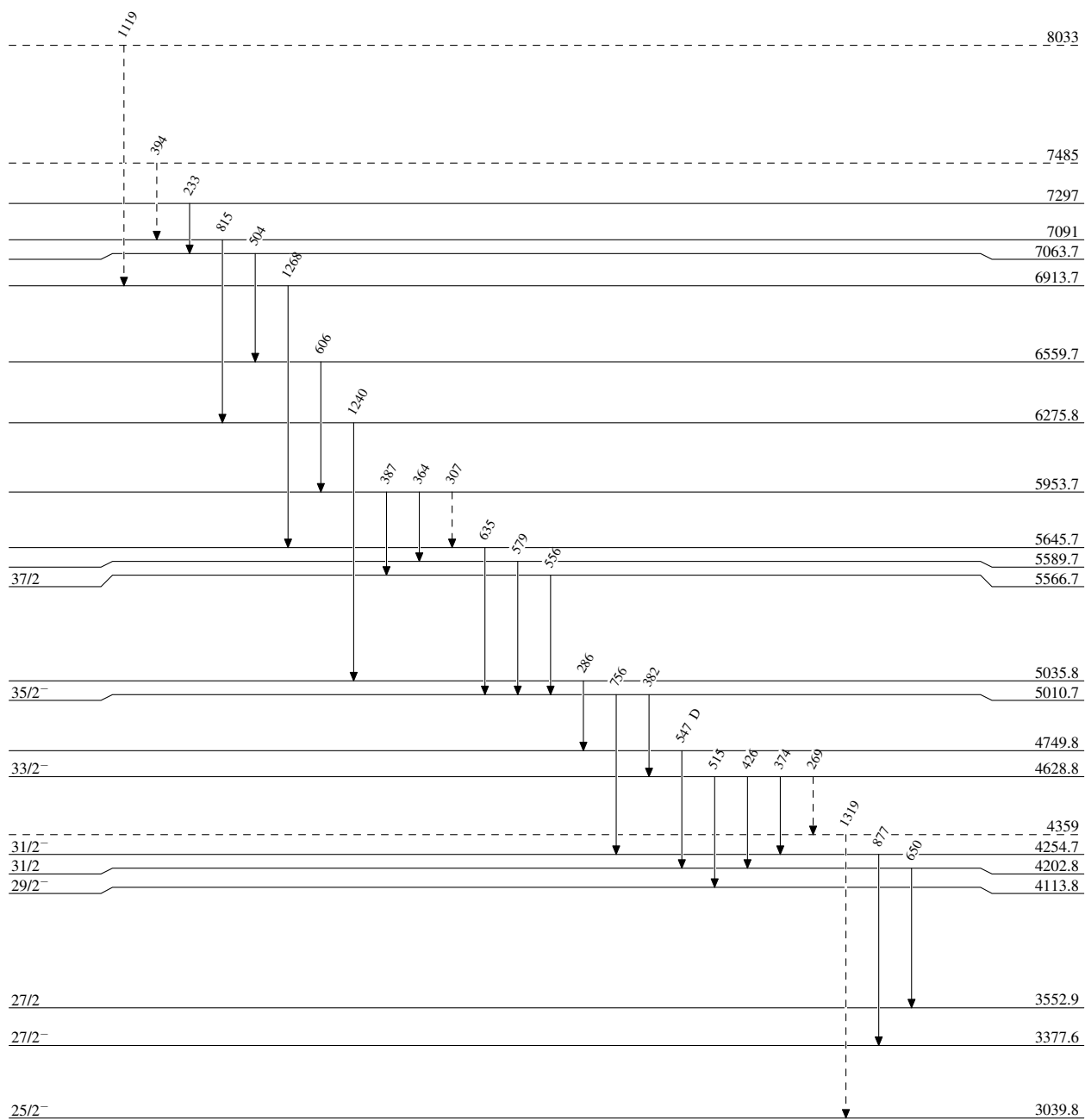
						<u><math>\gamma(^{123}\text{Te})</math></u>					
<u><math>E_\gamma</math></u>	<u><math>E_i(\text{level})</math></u>	<u><math>J_i^\pi</math></u>	<u><math>E_f</math></u>	<u><math>J_f^\pi</math></u>	<u>Mult.<sup>†</sup></u>	<u><math>E_\gamma</math></u>	<u><math>E_i(\text{level})</math></u>	<u><math>J_i^\pi</math></u>	<u><math>E_f</math></u>	<u><math>J_f^\pi</math></u>	<u>Mult.<sup>†</sup></u>
233	7297		7063.7			635	5645.7		5010.7	$35/2^-$	
269 <sup>‡</sup>	4628.8	$33/2^-$	4359?			640	887.0	$15/2^-$	247	$11/2^-$	
286	5035.8		4749.8			650	4202.8	$31/2$	3552.9	$27/2$	
300	4113.8	$29/2^-$	3813.9			666	1553.0	$17/2^-$	887.0	$15/2^-$	
307 <sup>‡</sup>	5953.7		5645.7			673	920.0	$13/2^-$	247	$11/2^-$	
320	1931.0	$21/2^-$	1611.0	$19/2^-$		724	1611.0	$19/2^-$	887.0	$15/2^-$	
326	2685.0		2359.1	$23/2^-$		739	3552.9	$27/2$	2813.9	$23/2$	
338	3377.6	$27/2^-$	3039.8	$25/2^-$		748	2359.1	$23/2^-$	1611.0	$19/2^-$	
355	3039.8	$25/2^-$	2685.0			754	2685.0		1931.0	$21/2^-$	
364	5953.7		5589.7			756	5010.7	$35/2^-$	4254.7	$31/2^-$	
374	4628.8	$33/2^-$	4254.7	$31/2^-$		774	3813.9		3039.8	$25/2^-$	
378	1931.0	$21/2^-$	1553.0	$17/2^-$		806	2358.9		1553.0	$17/2^-$	
382	5010.7	$35/2^-$	4628.8	$33/2^-$		815	7091		6275.8		
387	5953.7		5566.7	$37/2$		877	4254.7	$31/2^-$	3377.6	$27/2^-$	
394 <sup>‡</sup>	7485?		7091			883	2813.9	$23/2$	1931.0	$21/2^-$	D
426	4628.8	$33/2^-$	4202.8	$31/2$		1018	3377.6	$27/2^-$	2359.1	$23/2^-$	
428	2359.1	$23/2^-$	1931.0	$21/2^-$		1074	2685.0		1611.0	$19/2^-$	
455	2813.9	$23/2$	2358.9			1074	4113.8	$29/2^-$	3039.8	$25/2^-$	
504	7063.7		6559.7			1109	3039.8	$25/2^-$	1931.0	$21/2^-$	
515	4628.8	$33/2^-$	4113.8	$29/2^-$		1119 <sup>‡</sup>	8033?		6913.7		
547	4749.8		4202.8	$31/2$	D	1129	3813.9		2685.0		
556	5566.7	$37/2$	5010.7	$35/2^-$		1240	6275.8		5035.8		
579	5589.7		5010.7	$35/2^-$		1268	6913.7		5645.7		
606	6559.7		5953.7			1319 <sup>‡</sup>	4359?		3039.8	$25/2^-$	
633	1553.0	$17/2^-$	920.0	$13/2^-$							

<sup>†</sup> From  $\gamma\gamma(\text{DCO})$  in **1996B112**.  
<sup>‡</sup> Placement of transition in the level scheme is uncertain.

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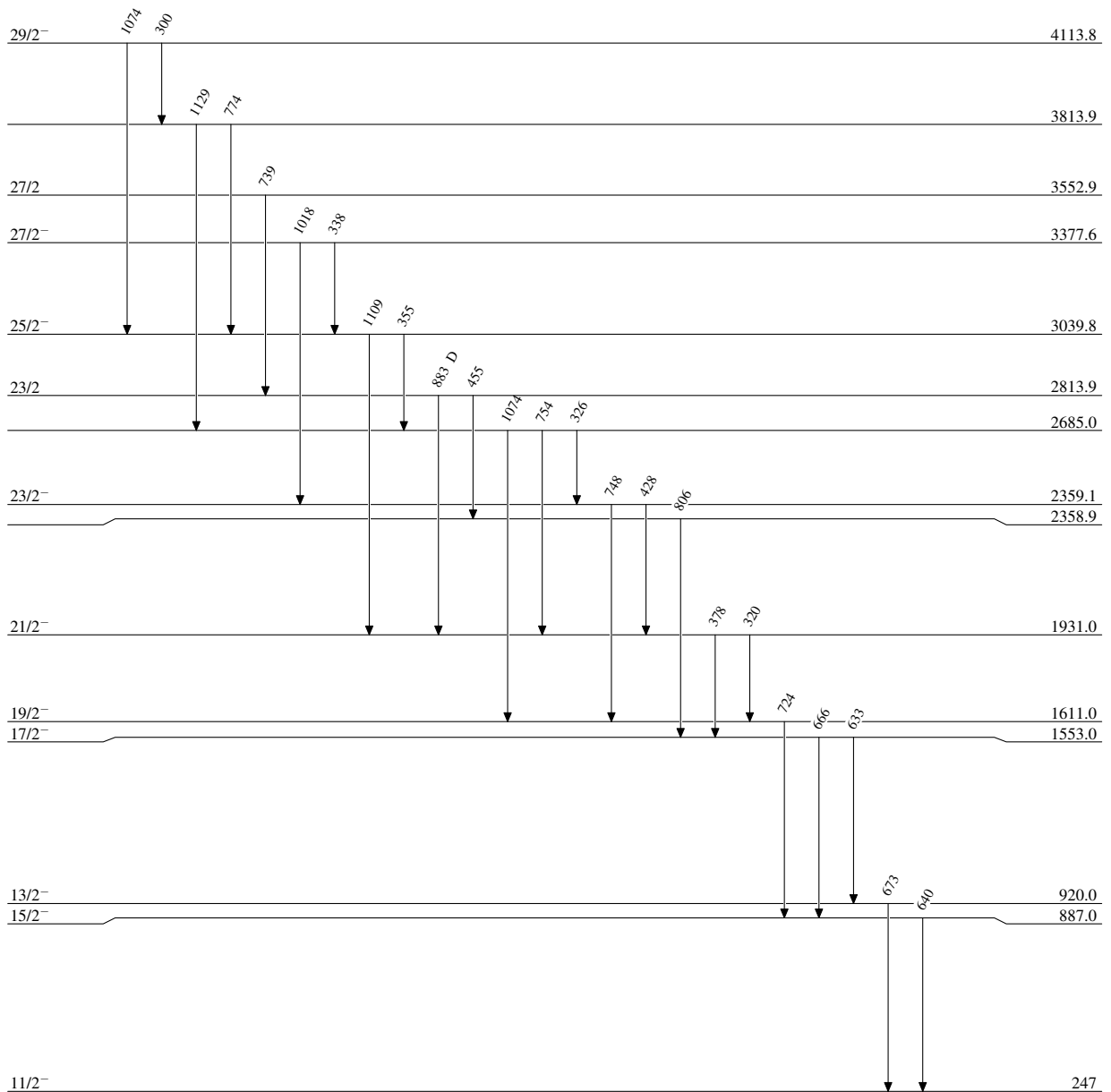
Legend

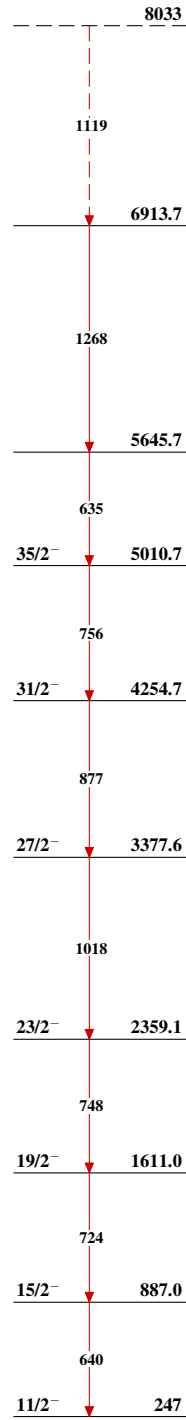
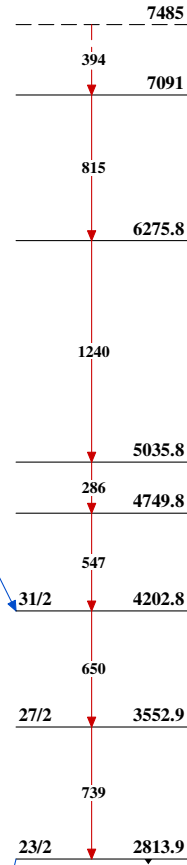
## Level Scheme

-----►  $\gamma$  Decay (Uncertain) $^{123}_{52}\text{Te}_{71}$

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## Level Scheme (continued)

 $^{123}_{52}\text{Te}_{71}$

$^{116}\text{Cd}(^{11}\text{B},\text{p}3\text{n}\gamma)$  1996BI12Band(A): Band based on  
 $11/2^-$ Seq.(C): Sequence based  
on  $23/2^-$ Seq.(B): Sequence based  
on  $21/2^-$ 