

¹⁴N(¹³⁶Xe,6n γ) **1994ZhZW**

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	A. A. Sonzogni	NDS 93, 599 (2001)	1-Dec-2000

¹⁴N(¹³⁶Xe,6n γ): E=8.5 MeV/nucleon; ¹³⁸Ba(¹⁰B,4n γ): E=42.5-55 MeV. Measured E γ , $\gamma\gamma$ -coin, $\gamma(\theta)$, excitation functions, 4 Compton-suppressed Ge detectors.

Earlier publications from the same group: [1993Mu03](#), [1993Go12](#).

[1993Mu03](#): ¹⁴N(¹³⁶Xe,6n γ), E=8.5 MeV/nucleon; Ba(¹⁰B,xn γ), E=22.5-55 MeV; measured E γ , prompt/delayed $\gamma\gamma$ -coincidence, excitation function; nine Compton-suppressed Ge detectors in the focal plane of gas-filled separator.

[1993Go12](#): ¹⁴N(¹³⁶Xe,6n γ), E=8.5 MeV; measured E γ , $\gamma\gamma$ -coin; 7 Compton-suppressed Ge detectors at focal plane of gas-filled separator.

The high-spin γ data were not placed in a level scheme. Many of these γ 's were also observed by [1993GI03](#) and [1994ZhZW](#), who did build a level scheme.

¹⁴⁴Pm Levels

E(level) [†]	J ^{π} [‡]	T _{1/2}	Comments
0	5 ⁻		
171.8	6 ⁻		
232	6 ⁻		
514	7 ⁻		
841	9 ⁺	0.78 μ s 20	T _{1/2} : from 1993Mu03 , 1993Go12 .
1274.5	10 ⁺		
1705	10 ⁺		
2072	11 ⁻		
2270	12 ⁽⁻⁾		
2312.8	11 ⁺		
2668.7			
2775.3	13 ⁺		
2890			
3060.6	14 ⁺		
3349			
3410.2			
3431	14 ⁽⁻⁾		
3512			
3729.5			
3795.7	15 ⁺		
3900	15 ⁽⁻⁾		
3906.1			
4036			E(level): not given by authors, calculated as 3431+605 keV.
4119	16 ⁽⁻⁾		
4329.2			
4505			
4558	(17 ⁺)		J ^{π} : authors do not provide reasons for the 17 ⁺ assignment, the 1047 keV feeds a state of unknown J.
4660			E(level): not given by authors, calculated as 0.5x(5454-796+4036+625) keV.
4718			
5062			E(level): not given by authors, calculated as 0.5x(5458-397 +3906.1+1156) keV.
5119			E(level): not given by authors, calculated as 6265-1146 keV.
5454			E(level): not given by authors, calculated as 6265-811 keV.
5458			E(level): not given by authors, calculated as 6348-890 keV.
6265			
6348			
7108			
7559			
7974			E(level): the same level is given 2 different values of energy: 7975 and 7973 keV, the average

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$^{14}\text{N}(^{136}\text{Xe},6n\gamma)$ 1994ZhZW (continued) ^{144}Pm Levels (continued)

<u>E(level)[†]</u>	<u>J^π[‡]</u>	<u>T_{1/2}</u>	Comments
8511			is taken here.
8596.5	(25 to 35)	≈2.7 μs	

[†] As given by authors, unless noted otherwise.

[‡] As given by authors, from $\gamma(\theta)$.

 $\gamma(^{144}\text{Pm})$

<u>E_γ</u>	<u>E_i(level)</u>	<u>J_i^π</u>	<u>E_f</u>	<u>J_f^π</u>	Comments
83.5	6348		6265		
85.5	8596.5	(25 to 35)	8511		
106.6 [†]	2775.3	13 ⁺	2668.7		E _γ : from level difference. A transition is shown in the level scheme, but its energy is not written.
110	3906.1		3795.7	15 ⁺	
171.8	171.8	6 ⁻	0	5 ⁻	
176.6 [†]	3906.1		3729.5		E _γ : this transition is hinted in the Radford-style plot in which the data are presented. The energy is calculated from level differences since the transition energy is not given.
198	2270	12 ⁽⁻⁾	2072	11 ⁻	
219	4119	16 ⁽⁻⁾	3900	15 ⁽⁻⁾	
221	2890		2668.7		
232.4	232	6 ⁻	0	5 ⁻	
281.9	514	7 ⁻	232	6 ⁻	
285	3060.6	14 ⁺	2775.3	13 ⁺	
319	3729.5		3410.2		
326.5	841	9 ⁺	514	7 ⁻	
342.5	514	7 ⁻	171.8	6 ⁻	
356	2668.7		2312.8	11 ⁺	
367	2072	11 ⁻	1705	10 ⁺	
386.5	4505		4119	16 ⁽⁻⁾	
397	5458		5062		
413.5	7974		7559		
423	4329.2		3906.1		
430.4	1705	10 ⁺	1274.5	10 ⁺	
433.5	1274.5	10 ⁺	841	9 ⁺	
446	3795.7	15 ⁺	3349		
451	3512		3060.6	14 ⁺	
459	3349		2890		
468	3900	15 ⁽⁻⁾	3431	14 ⁽⁻⁾	
505	2775.3	13 ⁺	2270	12 ⁽⁻⁾	
538.2	8511		7974		
574	3349		2775.3	13 ⁺	
605	4036		3431	14 ⁽⁻⁾	
608	4119	16 ⁽⁻⁾	3512		
608.5	841	9 ⁺	232	6 ⁻	
614	5119		4505		
620	2890		2270	12 ⁽⁻⁾	
625	4660		4036		
634	3410.2		2775.3	13 ⁺	
669.1	841	9 ⁺	171.8	6 ⁻	E _γ : from 1993Mu03, since the published value is 699 keV, which does not agree with a level energy of 841 keV, and is most likely a typing error.

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$^{14}\text{N}(^{136}\text{Xe},6n\gamma)$ **1994ZhZW (continued)** $\gamma(^{144}\text{Pm})$ (continued)

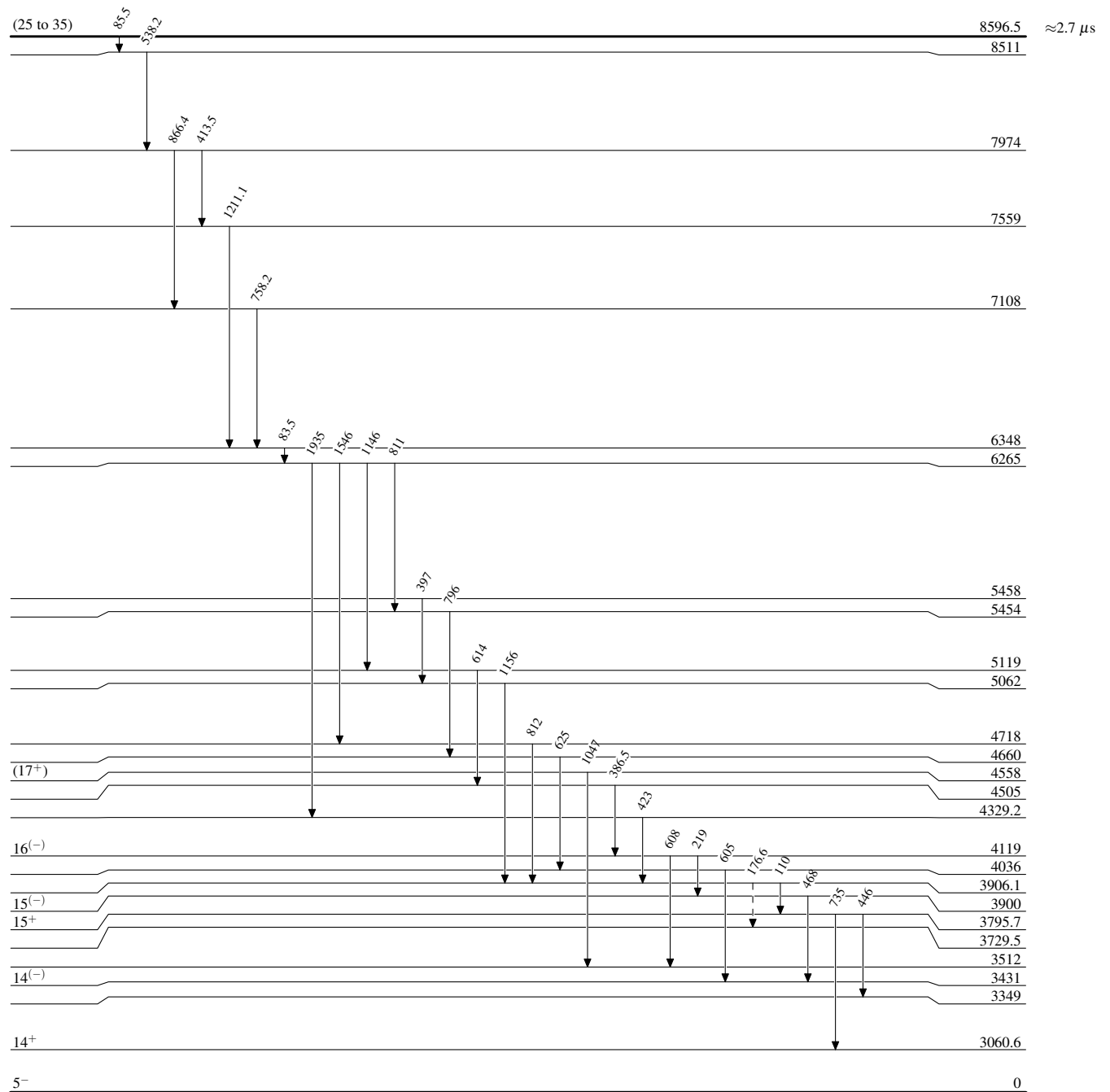
E_γ	$E_i(\text{level})$	J_i^π	E_f	J_f^π	E_γ	$E_i(\text{level})$	J_i^π	E_f	J_f^π
735	3795.7	15 ⁺	3060.6	14 ⁺	1047	4558	(17 ⁺)	3512	
758.2	7108		6348		1146	6265		5119	
796	5454		4660		1156	5062		3906.1	
811	6265		5454		1161	3431	14 ⁽⁻⁾	2270	12 ⁽⁻⁾
812	4718		3906.1		1211.1	7559		6348	
864	1705	10 ⁺	841	9 ⁺	1471.8	2312.8	11 ⁺	841	9 ⁺
866.4	7974		7108		1546	6265		4718	
1038.3	2312.8	11 ⁺	1274.5	10 ⁺	1935	6265		4329.2	

† Placement of transition in the level scheme is uncertain.

$^{14}\text{N}(^{136}\text{Xe},6n\gamma)$ 1994ZhZW

Legend

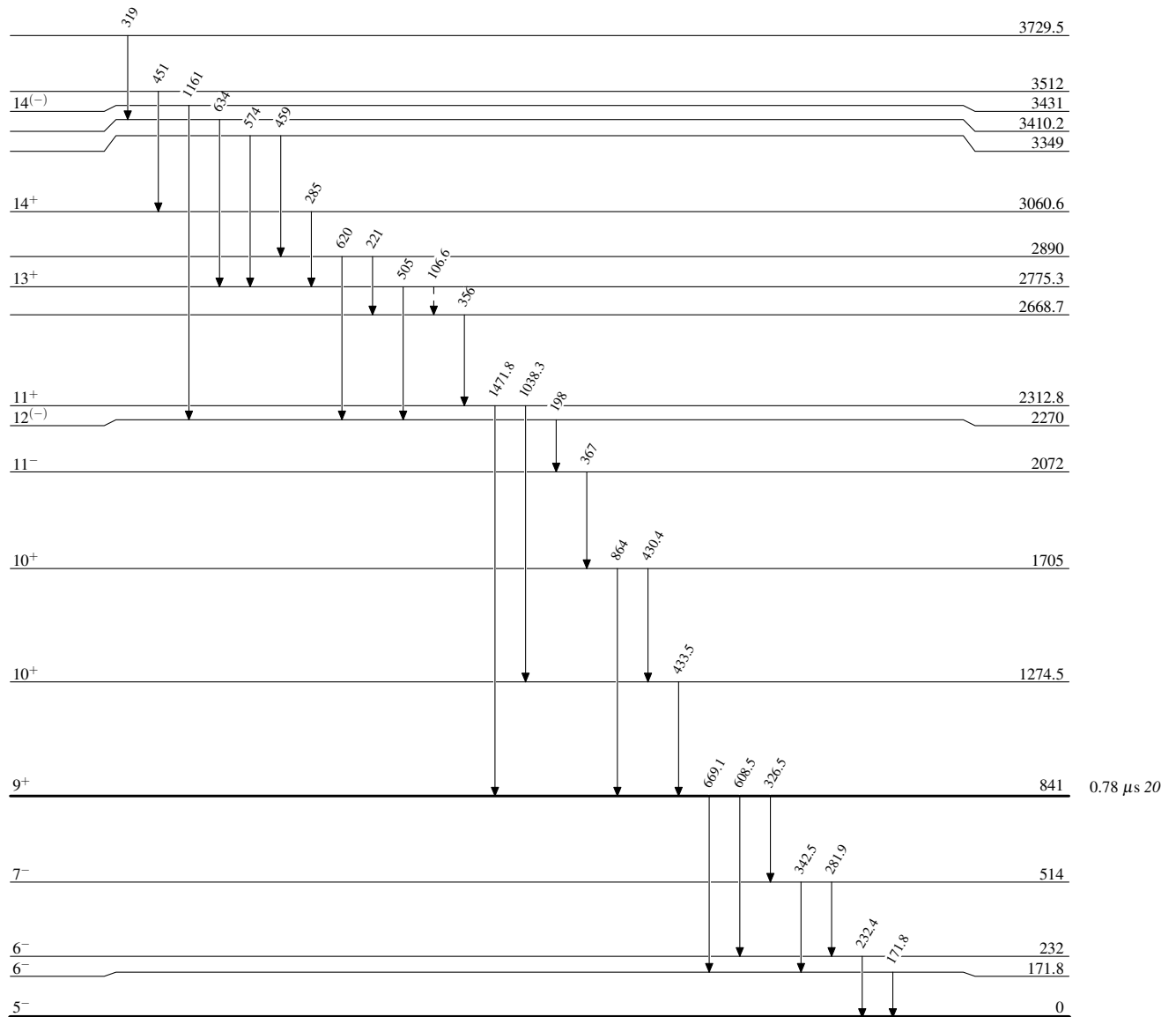
Level Scheme

-----▶ γ Decay (Uncertain) $^{144}_{61}\text{Pm}_{83}$

$^{14}\text{N}(^{136}\text{Xe},6n\gamma)$ 1994ZhZW

Legend

Level Scheme (continued)

-----► γ Decay (Uncertain) $^{144}_{61}\text{Pm}_{83}$