¹¹⁵In(α,nγ) **1992Gu12**

		History	
Туре	Author	Citation	Literature Cutoff Date
Full Evaluation	K. Kitao	NDS 75,99 (1995)	1-Feb-1993

1992Gu12: E=14.5 MeV; γ , $\gamma\gamma$ coin, ce.

The level scheme is that proposed by 1992Gu12. The $(p,n\gamma)$ data also reported by same authors. For decay from 269.7 level(13.3 ns) and 969.8 level(22.6 ns), see ${}^{115}In(\alpha,n), {}^{118}Sn(p,n)(d,2n)$: delayed decay.

¹¹⁸Sb Levels

E(level) [†]	J ^{π‡}	T _{1/2} @	Comments
0.0	1+	3.6 min 1	
31.18 5	(2)	<15 ns	
50.77 4	$(3)^{+}$	20.6 µs 6	
81.95 8	$(4)^+$		
166.10 4	$(2)^+$		
$250^{a} 6$	8-	5.00 h 2	Additional information 1.
269.75 5	$(3)^{-}$	13.3 ns 2	
324.31 3	2+		
324.61 5	$(4)^{+}$		
398.11 5	$(4)^{-}$		
403.41 4	$(3)^{+}$		
540.60 4	3+		
557.25 5	(3,4)		
568.23 ^{&} 3	$(6.7.8)^{-}$		
569.82 7	$(4.5)^{-}$		
606 31 27	(5)#		
618 70 5	$(345)^+$		
622.20.21	$1^+.2^+$		
627.99 7	(5^+)		
628.92 6	$(3)^+$		
637.48 6	$(3.4.5)^{-}$		
682.93 6	$(3,4,5)^{-}$		
741.01 8	$(2,3)^+$		
760.38 5			
788.27 5	$(2,3)^+$		
808.21 12			
821.07 6	$(2 \text{ to } 5)^{-}$		
821.66 <mark>&</mark> 4	$(6^{-}, 7, 8)$		
833.70 7	$(2,3)^{-}$		
837.29 22	(6^{+})		
852.34 7	$(3,4,5)^+$		
873.42 12			
890.15 ^{&} 7			
926.48 <mark>&</mark> 4	7.8.9-		
020.10° 12	7,0,5		
929.77 12	$(3 4 5)^+$		
947 79 24	(3,7,3)		
964.88 ^{&} 4	$(7)^{+}$	22.6 ns <i>3</i>	
985 25 11	$(34)^{\#}$		
008.60^{a} \circ	+#		
998.00° ð			
998.63°C 6	7,8,9-		
1017.05 11			
1023.99 6			

			-		-	
				¹¹⁸ Sb Leve	els (continued)	
E(level) [†]	J ^π ‡	E(level) [†]	J#‡	E(level) [†]	E(level) [†]	J ^{π‡}
1044.25 4	$(2,3)^+$	1170.72? 16		1309.35 11	1635.65 ^{&} 9	
1072.88 7	-	1187.21 ^{&} 4	7-,8-,9-	1325.50 12	1640.24 ^{&} 11	
1081.28 12	(+)	1192.11 <i>21</i>	(2 to 6) ⁺	1331.18 8	1693.38 <mark>&</mark> 12	
1093.65 11		1195.94 8		1335.92 ^{&} 5	1712.08 ^{&} 6	
1113.50 11		1211.30 9		1381.52 12	1753.38 ^{&} 22	(10 ⁻)
1117.49 17	$(1,2,3)^+$	1213.17 8	-	1392.77 ^{&} 12	1802.28 ^{&} 11	
1124.37 7		1224.34 ^{&} 9	(8 ⁻)	1405.34 ^{&} 10	1820.84 ^{&} 14	
1142.44 8		1233.49 <i>13</i>		1427.08 ^{&} 9	1852.25 ^{&} 11	
1147.70 ^{&} 4		1269.89 12		1451.05 ^{&} 7	1889.02 ^{&} 21	
1152.73 11		1280.21 11		1458.16 12	2104.65 ^{&} 9	
1153.80 7		1295.90 11		1541.97 ^{&} 13	2115.58 ^{&} 24	(11 ⁻)
1164.46 9		1299.47 7		1582.24 ^{&} 11	2171.58 ^{&} <i>13</i>	
1168.42 11		1306.51 12		1633.70 ^{&} 7		

¹¹⁵In(α ,n γ) 1992Gu12 (continued)

 † From a least-squares fit to E($\gamma's)$ unless otherwise noted.

[‡] From Adopted Levels unless otherwise noted.
[#] Tentatively given by authors based on excit.

[@] From Adopted Levels.

& Levels built on the 5.00-h isomer at 250 keV. Uncertainty does not include the uncertainty in energy of the isomeric state.

^a From Adopted Levels.

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$\gamma(^{118}\text{Sb})$

 α (K)exp normalized to α (K)(M1+E2)=0.0222 *10* for 324.28 γ with the small mixing ratio (δ =-0.09 *17*) (1992Gu12).

E_{γ}^{\dagger}	I_{γ}^{\ddagger}	E _i (level)	\mathbf{J}_i^{π}	$\mathbf{E}_f \qquad \mathbf{J}_f^{\pi}$	Mult. [#]	$\delta^{@}$	α^{a}	Comments
31.2 1		31.18	(2)	0.0 1+				
37.1 1		1224.34	(8-)	1187.21 7-,8-,9-	-			
50.8 1		50.77	$(3)^{+}$	$0.0 1^+$				
103.64 <i>3</i>	9.0 5	269.75	(3)-	$166.10 (2)^+$				
108.7 1	0.6 1	929.77		821.07 (2 to 5)	-			
110.5 1	0.4 1	947.79		837.29 (6+)				
112.3 1	a	741.01	$(2,3)^+$	$628.92(3)^+$				
115.37 3	46.2 20	166.10	$(2)^+$	$50.77 (3)^+$	M1		0.418	α (K)exp=0.305 28. α (K)=0.360.
128.37 3	44.3 20	398.11	$(4)^{-}$	$269.75(3)^{-1}$	M1		0.310	$\alpha(K)\exp=0.240\ 28.\ \alpha(K)=0.267.$
138.15 3	2.12	821.07	(2 to 5)	682.93 (3,4,5)				
141.09 3	5.0 Z	700.38	(2, 4)	(010.70 (3,4,3)) $(02.41 (2)^+$				
153.62 5	0.23 051	324 31	(3,4)	403.41 (3) 166.10 (2) ⁺				
171.7 1	<6.2	1325.50	2	1153.80				
171.8 1	18.3	569.82	$(4.5)^{-}$	398.11 (4)	M1		0.138	$\alpha(K) \exp = 0.098 \ 30. \ \alpha(K) = 0.119.$
177.03 7	0.3 1	998.63	7,8,9-	821.66 (6 ⁻ ,7,8)				
187.9 <i>1</i>	3.96	269.75	(3)-	81.95 (4)+	E1		0.0321	$\alpha(K) \exp = 0.026 \ 4. \ \alpha(K) = 0.0279.$
188.7 2	1.7 <i>1</i>	1187.21	7-,8-,9-	998.60 +				
202.7 1	3.7 2	1427.08		1224.34 (8 ⁻)				
203.1 1	3.5 5	760.38		557.25 (3,4)				
206.6 ^b 1	&	1392.77		1187.21 7-,8-,9-	-			
206.6 ^b 1	&	1541.97		1335.92				
208.2 2	0.5 2	606.31	(5)	398.11 (4)-				
209.3 2	16.0 9	837.29	(6 ⁺)	627.99 (5 ⁺)	M1+E2	0.7 +6-5	0.095 14	$\alpha(K) \exp = 0.080 \ 9. \ \alpha(K) = 0.080 \ 10.$ δ : from $\alpha(K) \exp \theta$
215.4 2	0.5 2	618.70	$(3,4,5)^+$	403.41 (3)+				o. nom a(n)o.p.
216.28 3	4.0 4	540.60	3+	324.31 2+	M1(+E2)		0.093 19	$\alpha(K) \exp = 0.071 \ 12. \ \alpha(K) = 0.078 \ 14.$
x222.33 10	6.6 4							
222.4 1	7.3 <i>3</i>	1187.21	7-,8-,9-	964.88 $(7)^+$				
224.35 3	2.3 2	852.34	$(3,4,5)^+$	627.99 (5 ⁺)				
228.9 2	0.6 2	1081.28	(*)	852.34 (3,4,5)+				
232.65 5	3.7 4	557.25	(3,4)	$324.61 (4)^+$				
237.35 3	23 3	403.41	(3) ⁺ (2) [−]	$166.10(2)^{+}$				
238.373	89 J 1 0 5	269.75	(3)	31.18 (2)				
243.8 1	1.0.5	1260.80		1023 00				
2 4 3.91 25131	313	821.07	$(2 \text{ to } 5)^{-}$	$569.82 (4.5)^{-1023.33}$				
253 41 4	12.0.11	821.66	$(2^{-}0^{-})$	568 23 (6 7 8)				
260.8 1	2.8 3	1187.21	789-	926.48 7.8.9				
	2.00		. ,,,,,,,	,,,,,,				

From ENSDF

	¹¹⁵ In(α ,n γ) 1992Gu12 (continued)							
					$\gamma(^{118}$	Sb) (continue	ed)	
${\rm E_{\gamma}}^{\dagger}$	I_{γ}^{\ddagger}	E _i (level)	\mathbf{J}_i^{π}	$\mathbf{E}_f = \mathbf{J}_f^{\pi}$. Mult. [#]	$\delta^{@}$	α ^{<i>a</i>}	Comments
273.7 <i>1</i> 273.84 <i>3</i> 284 84 4	4.7 5 104 9 1 3 2	324.31 324.61 682.93	2^+ (4) ⁺ (3 4 5) ⁻	$50.77 (3)^+$ $50.77 (3)^+$ $398 11 (4)^-$	M1(+E2)		0.045 5	$\alpha(K)\exp=0.032$ 5. $\alpha(K)=0.038$ 4.
x287.35 3 294.1 1	2.1 2 6.8 5	618.70	$(3,4,5)^+$	324.61 (4) ⁺	M1(+E2)		0.036 4	$\alpha(K)\exp=0.025 5. \alpha(K)=0.0308 22.$
295.1 <i>1</i> 297.1 <i>1</i>	0.8 <i>1</i> 0.9 <i>3</i>	852.34 1187.21	$(3,4,5)^+$ 7 ⁻ ,8 ⁻ ,9 ⁻	557.25 (3,4) 890.15				
300.0 <i>1</i> 303.5 2	1.1 5 32 5	569.82 627.99	$(4,5)^{-}$ (5^{+})	$269.75 (3)^{-}$ $324.61 (4)^{+}$				
303.6 <i>1</i> 304.3 2	4.8 5 3.0 6	873.42 628.92	$(3)^+$	$569.82 (4,5)^{-1}$ 324.61 (4) ⁺ 224.21 2 ⁺	-			
305.5 2 310.3 <i>1</i>	2.0 <i>10</i> 0.5 <i>1</i>	1458.16 1852.25	(3)	1152.73 1541.97				
315.7 <i>1</i> 318.23 <i>3</i> 321.04 7	3.1 <i>3</i> 68.4 <i>16</i> 5 <i>4 3</i>	1458.16 568.23	(6,7,8) ⁻	1142.44 250 8 ⁻ 568 23 (6 7 8	M1,E2		0.0288 18	$\alpha(K)\exp=0.025 \ 3. \ \alpha(K)=0.0245 \ 12.$
324.28 <i>3</i> 326.3 <i>2</i>	12.1 5 2.4 <i>1</i>	324.31 1753.38	2 ⁺ (10 ⁻)	0.0 1 ⁺ 1427.08	M1(+E2)	-0.09 17	0.0257 2	Mult., δ : from $\gamma(\theta)$ in (p,n γ) and K/L.
$352.62 \ 8$ $357.1 \ 2$ $358 \ 3^{b} \ 4$	3.9 3 0.8 2 0.5 1	403.41 760.38 926.48	(3) ⁺ 7 8 9 ⁻	$50.77 (3)^+$ 403.41 (3) ⁺ 568 23 (6.7.8	<u>8</u>)-			
362.2 <i>1</i> 367.73 <i>3</i>	0.9 <i>1</i> 8.8 <i>4</i>	2115.58 637.48	(11^{-}) $(3,4,5)^{-}$	$\begin{array}{c} 300.25 & (0,7,0) \\ 1753.38 & (10^{-}) \\ 269.75 & (3)^{-} \end{array}$)			
371.06 <i>3</i> 374.51 <i>4</i> 376.17 <i>4</i>	7.3 2 9.3 4 1.6 1	1335.92 540.60 1712.08	3+	964.88 $(7)^+$ 166.10 $(2)^+$ 1335.92				
379.43 <i>5</i> 385.0 <i>1</i>	2.7 2 0.5 2	1213.17 788.27	- (2,3) ⁺	$\begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$	_			
396.65 <i>4</i> 410.1 <i>1</i>	0.3 <i>I</i> 19.7 8 0.4 <i>I</i>	964.88 808.21	$(7)^{+}$	$\begin{array}{c} 1712.08\\ 568.23 (6,7,8)\\ 398.11 (4)^{-} \end{array}$	B) ⁻ E1(+M2)		0.03 3	$\alpha(K)\exp=0.0046 \ \delta. \ \alpha(K)(E1)=0.00384, \ \alpha(K)(M2)=0.0488.$
413.2 <i>1</i> 415.5 <i>1</i> 422.96 3	12.8 5 0.3 <i>1</i> 3 6 2	682.93 1820.84 821.07	$(3,4,5)^{-}$ $(2 \text{ to } 5)^{-}$	$269.75 (3)^{-}$ 1405.34 398.11 (4)^{-}	M1,E2		0.0138 2	$\alpha(K)\exp=0.010\ 2.\ \alpha(K)=0.0118\ 3.$ $\alpha(K)\exp=0.009\ 3.\ \alpha(K)=0.0111\ 4.$
430.4 <i>1</i> 435.7 <i>1</i>	0.6 <i>1</i> 1.7 <i>3</i>	998.63 760.38	7,8,9 ⁻	$568.23 (6,7,8)$ $324.61 (4)^+$	3) ⁻		0.0129 2	
446.49 <i>6</i> 453.3 <i>1</i> 454.2 <i>1</i>	0.7 <i>1</i> 7.0 <i>4</i> 0.3 <i>1</i>	1633.70 1081.28 852.34	$(^+)$ (3,4,5) ⁺	$\begin{array}{rrrr} 1187.21 & 7^{-},8^{-} \\ 627.99 & (5^{+}) \\ 398.11 & (4)^{-} \end{array}$	-,9- M1,E2		0.0107 4	$\alpha(K) \exp = 0.0092$ 19. $\alpha(K) = 0.0092$ 4.
456.1 2 462.85 5	1.5 <i>3</i> 6.7 <i>5</i>	622.20 628.92	$1^+, 2^+$ (3) ⁺	$\begin{array}{ccc} 166.10 & (2)^+ \\ 166.10 & (2)^+ \end{array}$	M1,E2		0.0101 4	$\alpha(K)\exp=0.0079$ 14. $\alpha(K)=0.0087$ 5.

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 ${}^{118}_{51}{
m Sb}_{67}{
m -4}$

From ENSDF

 $^{118}_{51}{\rm Sb}_{67}{\rm -4}$

¹¹⁵In(α ,n γ) **1992Gu12** (continued)

$\gamma(^{118}\text{Sb})$ (continued)

E_{γ}^{\dagger}	I_{γ}^{\ddagger}	E_i (level)	\mathbf{J}_i^{π}	E_f J_f^{π}	Mult. [#]	α ^{<i>a</i>}	Comments
483.4 1	1.5 2	1023.99		540.60 3+			
488.3 <i>3</i>	<2.2	1117.49	$(1.2.3)^+$	$628.92(3)^+$			
503.7 1	0.9 4	1044.25	$(2,3)^+$	540.60 3+			
506.4 2	23 10	557.25	(3,4)	$50.77 (3)^+$			
516.3 <i>1</i>	0.4 1	1852.25		1335.92			
527.7 1	8.78	852.34	$(3,4,5)^+$	$324.61 (4)^+$	M1,E2		$\alpha(K) \exp = 0.0056 \ 14. \ \alpha(K) = 0.0062 \ 5.$
528.4 1	0.3 2	1211.30		682.93 (3,4,5))_		
536.4 1	0.6 2	1093.65		557.25 (3,4)			
551.29 7	0.7 2	821.07	$(2 \text{ to } 5)^{-}$	269.75 (3)-			
558.46 5	1.1 2	1195.94		637.48 (3,4,5))_		
563.90 5	2.9 <i>3</i>	833.70	$(2,3)^{-}$	269.75 (3)-	M1,E2	0.0060 5	$\alpha(K)\exp=0.0044$ 14. $\alpha(K)=0.0052$ 5.
567.94 <i>3</i>	13.0 5	618.70	$(3,4,5)^+$	$50.77 (3)^+$	M1,E2	0.0060 5	$\alpha(K)\exp=0.0048 \ 8. \ \alpha(K)=0.0051 \ 5.$
571.7 <i>1</i>	1.5 2	1392.77		821.07 (2 to 5	5)-		
571.9 <i>1</i>	2.1 2	821.66	$(6^{-},7,8)$	250 8-			
572.9 1	0.8 <i>3</i>	1113.50		540.60 3+			
575.1 2	0.6 2	741.01	$(2,3)^+$	$166.10 (2)^+$			
577.2 2	<2.9	1541.97		964.88 (7)+			
577.3 2	<2.9	627.99	(5^{+})	$50.77 (3)^+$			
5/9.47 3	6.3 2	1147.70		568.23 (6,7,8))_		
583.7 3	0.8 1	1405.34		821.66 (6 ⁻ ,7,8	8)		
585.1 1	0.7 2	1142.44		557.25 (3,4)			
594.7 1	1.8 3	1164.46		569.82 (4,5)			
595.5 1	1.6.5	1152.73		557.25 (3,4)			
605.5 1	0.72	1233.49	$(2, 4, 5)^+$	$627.99(5^{+})$			
614.36 3	2.72	938.97	$(3,4,5)^{+}$	324.61 (4) ⁺	(M1,E2)		$\alpha(\mathbf{K})\exp=0.0050$ 13. $\alpha(\mathbf{K})=0.0042$ 4.
619.0 I	1.2 1	1187.21	7 ,8 ,9	308.23 (0,7,8))		
620.7 1	4.0 5	1025.99		$403.41(3)^{-1}$			
640.87.6	0.72	1035.05	$(2, 2)^{+}$	998.05 7,8,9	M1 E2		$\alpha(K) = 0.0020 \ 14 \ \alpha(K) = 0.0028 \ 4$
64172	0.6.2	1044.23	(2,3)	403.41 (3) 560.82 (4.5) ⁻	IVII,E2		$u(\mathbf{K})\exp(-0.0029)$ 14. $u(\mathbf{K})=0.0036$ 4.
674.2.1	152	008 60	+	309.62 (4,3)			
676 49 4	1.5 5	996.00	780-	250 8-			
x680 23 3	713	920.40	7,0,9	250 0			
690.0.1	105	741.01	$(2 3)^+$	$50.77(3)^+$			
701.8.2	0.5.2	1889.02	(2,3)	1187 21 7-8-	0 -		
714.9 1	5.8.5	964.88	$(7)^{+}$	$250 8^{-}$,		
715.5 1	1.8.3	985.25	(3.4)	$269.75(3)^{-1}$			
719.86 5	1.8 2	1044.25	$(2,3)^+$	324.31 2+			
737.49 4	1.9 2	788.27	$(2,3)^+$	$50.77 (3)^+$			
744.5 1	0.9 1	2171.58	x)- /	1427.08			
747.0 1	0.3 2	1712.08		964.88 (7) ⁺			
747.3 1	1.7 5	1017.05	-	269.75 (3)-			
748.5 1	7.3 <i>3</i>	998.63	7,8,9-	250 8-			

						¹¹⁵ In(α,ηγ	() 1992Gu12 (continued)
						<u> </u>	(¹¹⁸ Sb) (continued)
E_{γ}^{\dagger}	I_{γ}^{\ddagger}	E _i (level)	\mathbf{J}_i^{π}	E_f	J_f^π	Mult. [#]	Comments
755.3 1	1.5 2	1295.90		540.60	3+		
761.31 7	1.3 2	1331.18		569.82	$(4,5)^{-}$		
763.8 <mark>b</mark> 1	0.5 1	1693.38		929.77			
766.3 1	0.4 1	1164.46		398.11	$(4)^{-}$		
768.9 <i>1</i>	0.5 1	2104.65		1335.92			
788.2 2	1.4 <i>1</i>	788.27	$(2,3)^+$	0.0	1+		
793.3 2	0.8 2	1117.49	$(1,2,3)^+$	324.31	2+		
803.13 5	2.3 3	1072.88	-	269.75	(3)-		
811.7 1	0.4 1	1381.52		569.82	$(4,5)^{-}$		
813.1 1	1.0 2	1211.30		398.11	$(4)^{-}$		
817.97	3.84	1142.44		324.01	$(4)^+$		
829.14 /	3.8 /	1155.80	+	324.01	$(4)^+$		
832.0 I 837 1 I	1.9.5 2.1.2	998.00		568 23	(2) $(6.7.8)^{-}$		
837 4 1	0.6.3	1802.28		964.88	(0,7,0) $(7)^+$		
844 1 1	102	1168 42		324 31	2+		
854.62.5	2.6.3	1124.37		269.75	$(3)^{-}$		
867.5 2	2.0 3	1192.11	$(2 \text{ to } 6)^+$	324.61	$(4)^+$		
872.3 1	0.4 2	1693.38	(821.07	$(2 \text{ to } 5)^{-}$		
878.1 <i>1</i>	0.7 1	1044.25	$(2,3)^+$	166.10	$(2)^{+}$		
882.82 6	0.6 2	1451.05		568.23	(6,7,8) ⁻		
901.36 5	2.6 3	1299.47		398.11	(4) ⁻		
908.4 1	2.4 3	1306.51		398.11	$(4)^{-}$		
933.17 9	0.7 1	1331.18		398.11	(4) ⁻		
937.17 4	9.5 4	1187.21	7-,8-,9-	250	8-	M1(+E2)	α (K)exp=0.0019 3. α (K)=0.00154 18.
943.6 1	3.1 4	1213.17	-	269.75	(3)-		
955.6 1	1.2.2	1280.21	$(2,2)^+$	324.61	$(4)^+$		
962.2 <i>I</i>	1.0 2	1044.25	$(2,3)^{+}$	81.95	$(4)^{+}$		
9/3.15 /	2.3 2	1023.99		569.22	$(5)^{-1}$		
1014.0 1	0.82	1302.24		260.25	(0,7,8) $(3)^{-}$		\mathbf{E} : uncertainty from (n m) 1.2 keV given in the authors' table appears to be a
1039.0 1	1.7 2	1509.55		209.75	(3)		E_{γ} : uncertainty from (p, $n\gamma$), 1.2 keV given in the authors table appears to be a misprint.
1044.5 <i>1</i>	1.5 2	1044.25	$(2,3)^+$	0.0	1+		
1067.9 <mark>b</mark> 2	1.0 2	1635.65		568.23	(6,7,8)-		
1072.0 <i>1</i>	0.5 1	1640.24		568.23	$(6,7,8)^{-}$		
1153.9 <i>1</i>	3.0 2	1153.80		0.0	1+		
1177.1 <i>1</i>	2.0 2	1427.08		250	8-		
1201.6 ^b 3	0.5 1	1451.05		250	8-		
[†] From 1	992Gu12	2.					

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 $^{118}_{51}{
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m -6}$

From ENSDF

¹¹⁵In(α ,n γ) 1992Gu12 (continued)

 $\gamma(^{118}\text{Sb})$ (continued)

- [‡] Relative intensities at $E(\alpha)=14.5$ MeV were given.
- [#] From $\alpha(K)$ exp. [@] From $\gamma(\theta)$ unless otherwise noted.
- [&] Weak intensity, but no value was given by authors.
- ^{*a*} Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ -ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.
- ^b Placement of transition in the level scheme is uncertain.

 $x \gamma$ ray not placed in level scheme.



 $^{118}_{51}$ Sb₆₇



 $^{118}_{51}$ Sb₆₇









 $^{118}_{51}{
m Sb}_{67}$



¹¹⁸₅₁Sb₆₇



¹¹⁸₅₁Sb₆₇

¹¹⁵In(α,nγ) 1992Gu12



 $^{118}_{51}{
m Sb}_{67}$