

$^{107}\text{Ag}(^{28}\text{Si},2\text{p}2\text{n}\gamma)$ 1993We05

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	Yu. Khazov, I. Mitropolsky, A. Rodionov		NDS 107, 2715 (2006)	17-Jul-2006

1993We05: $^{107}\text{Ag}(^{28}\text{Si},2\text{p}2\text{n}\gamma)$ E=124 MeV, $^{116}\text{Sn}(^{19}\text{F},4\text{n}\gamma)$ E=93 MeV; measured $\gamma(\theta)$, $\gamma\gamma$. 2 HPGe detectors, 5 BGO-suppressed Ge detectors.
Other: 1990HuZW.

 ^{131}Pr Levels

The level scheme is based on $\gamma\gamma$ coincidence.

E(level) [†]	J π [‡]	T _{1/2} [#]	E(level) [†]	J π [‡]	E(level) [†]	J π [‡]
0 ^{&}	(3/2 ⁺)	1.51 min 2	1500.9 ^{@ 7}	(23/2 ⁻)	3079.9 ^{a 8}	(29/2 ⁺)
87.0 ^{a 4}	(5/2 ⁺)		1616.0 ^{a 7}	(17/2 ⁺)	3413.9 ^{& 9}	(31/2 ⁺)
151.8 ^{@ 5}	(11/2 ⁻)	5.73 s 20	1868.9 8	(19/2 ⁺)	3766.9 ^{a 9}	(33/2 ⁺)
250.0 ^{& 5}	(7/2 ⁺)		1948.9 ^{& 7}	(19/2 ⁺)	3881.9 ^{@ 10}	(35/2 ⁻)
407.9 ^{@ 6}	(15/2 ⁻)		2116.9 ^{a 7}	(21/2 ⁺)	4184.9 ^{& 10}	(35/2 ⁺)
447.0 ^{a 5}	(9/2 ⁺)		2242.9 ^{@ 8}	(27/2 ⁻)	4606.9 ^{a 10}	(37/2 ⁺)
678.0 ^{& 6}	(11/2 ⁺)		2326.9 ^{& 7}	(23/2 ⁺)	4753.9 ^{@ 11}	(39/2 ⁻)
874.9 ^{@ 6}	(19/2 ⁻)		2539.9 ^{a 7}	(25/2 ⁺)	5090.9 ^{& 11}	(39/2 ⁺)
978.0 ^{a 6}	(13/2 ⁺)		2795.9 ^{& 8}	(27/2 ⁺)	5691.9 ^{@ 11}	(43/2 ⁻)
1238.9 ^{& 6}	(15/2 ⁺)		3049.9 ^{@ 9}	(31/2 ⁻)	6706.9 ^{@ 12}	(47/2 ⁻)

[†] From-least squares fit to E γ 's assuming $\Delta E\gamma=0.4$ keV, except as noted (by evaluators).

[‡] From multiplicities and possible band structures.

[#] From Adopted Levels.

[@] Band(A): band, configuration=($\pi h_{11/2}[541]$, $\alpha=-1/2$).

[&] Band(B): band, configuration=($\pi g_{7/2}[413]$, $\alpha=-1/2$).

^a Band(C): band, configuration=($\pi g_{7/2}[413]$, $\alpha=+1/2$).

 $\gamma(^{131}\text{Pr})$

E γ [†]	I γ [†]	E _i (level)	J π _i [‡]	E _f	J π _f [‡]	Mult. [‡]	Comments
64.8 3		151.8	(11/2 ⁻)	87.0 (5/2 ⁺)		E3	E γ , Mult.: from $^{131}\text{Pr}(\text{IT})$ decays (1996Ge12).
87		87.0	(5/2 ⁺)	0 (3/2 ⁺)		M1	E γ , Mult.: from $^{131}\text{Nd}(\varepsilon)$ and $^{131}\text{Pr}(\text{IT})$ decays (1996Ge12).
163	14.8 30	250.0	(7/2 ⁺)	87.0 (5/2 ⁺)		M1	$\gamma(\theta)$: A ₂ =0.04 3, A ₄ =-0.09 4.
197		447.0	(9/2 ⁺)	250.0 (7/2 ⁺)			
231		678.0	(11/2 ⁺)	447.0 (9/2 ⁺)			
256	100 25	407.9	(15/2 ⁻)	151.8 (11/2 ⁻)		E2	$\gamma(\theta)$: A ₂ =0.28 3, A ₄ =-0.15 4.
300		978.0	(13/2 ⁺)	678.0 (11/2 ⁺)			
360		447.0	(9/2 ⁺)	87.0 (5/2 ⁺)			
378	12.6 10	2326.9	(23/2 ⁺)	1948.9 (19/2 ⁺)			
423	11.4 18	2539.9	(25/2 ⁺)	2116.9 (21/2 ⁺)			
428		678.0	(11/2 ⁺)	250.0 (7/2 ⁺)			
467	88.8 35	874.9	(19/2 ⁻)	407.9 (15/2 ⁻)		E2	$\gamma(\theta)$: A ₂ =0.29 2, A ₄ =-0.13 5.
469	17.8 35	2795.9	(27/2 ⁺)	2326.9 (23/2 ⁺)		E2	$\gamma(\theta)$: A ₂ =0.35 5, A ₄ =-0.09 3.
501		2116.9	(21/2 ⁺)	1616.0 (17/2 ⁺)			
531		978.0	(13/2 ⁺)	447.0 (9/2 ⁺)			

Continued on next page (footnotes at end of table)

$^{107}\text{Ag}(^{28}\text{Si}, 2\text{p}2\text{n}\gamma)$ **1993We05 (continued)** $\gamma(^{131}\text{Pr})$ (continued)

$E_\gamma^\dagger$	$I_\gamma^\dagger$	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. ‡	Comments
540	10.7 20	3079.9	(29/2 ⁺)	2539.9	(25/2 ⁺)		
561		1238.9	(15/2 ⁺)	678.0	(11/2 ⁺)		
616		2116.9	(21/2 ⁺)	1500.9	(23/2 ⁻)		
618	16.0 26	3413.9	(31/2 ⁺)	2795.9	(27/2 ⁺)		
626	79.9 44	1500.9	(23/2 ⁻)	874.9	(19/2 ⁻)	E2	$\gamma(\theta)$: $A_2=0.41$ 3, $A_4=-0.15$ 7.
630		1868.9	(19/2 ⁺)	1238.9	(15/2 ⁺)		
638		1616.0	(17/2 ⁺)	978.0	(13/2 ⁺)		
687		3766.9	(33/2 ⁺)	3079.9	(29/2 ⁺)		
710		1948.9	(19/2 ⁺)	1238.9	(15/2 ⁺)		
742	27.6 38	2242.9	(27/2 ⁻)	1500.9	(23/2 ⁻)	E2	Mult.: $\gamma(\theta)$: $A_2=0.09$ 10, $A_4=-0.17$ 5, mult.=E2 in the Table 1 of 1993We05 , but A_2 value does not support E2 assignment. Possible, A_2 value is a misprint: this transition is a stretched quadrupole in $\pi h_{11/2}$ band.
771		4184.9	(35/2 ⁺)	3413.9	(31/2 ⁺)		
807		3049.9	(31/2 ⁻)	2242.9	(27/2 ⁻)		
826	11.8 18	2326.9	(23/2 ⁺)	1500.9	(23/2 ⁻)	E1	$\gamma(\theta)$: $A_2=-0.12$ 3, $A_4=-0.09$ 5.
832		3881.9	(35/2 ⁻)	3049.9	(31/2 ⁻)		
840		4606.9	(37/2 ⁺)	3766.9	(33/2 ⁺)		
872		4753.9	(39/2 ⁻)	3881.9	(35/2 ⁻)		
906		5090.9	(39/2 ⁺)	4184.9	(35/2 ⁺)		
938		5691.9	(43/2 ⁻)	4753.9	(39/2 ⁻)		
1015		6706.9	(47/2 ⁻)	5691.9	(43/2 ⁻)		
1039	6.8 10	2539.9	(25/2 ⁺)	1500.9	(23/2 ⁻)		
1074	8.9 13	1948.9	(19/2 ⁺)	874.9	(19/2 ⁻)	E1	$\gamma(\theta)$: $A_2=-0.24$, $A_4=0.01$ 4.

[†] From **1993We05**.[‡] From $\gamma(\theta)$ and systematics on Pr isotopes in framework of the Nilsson schemes.

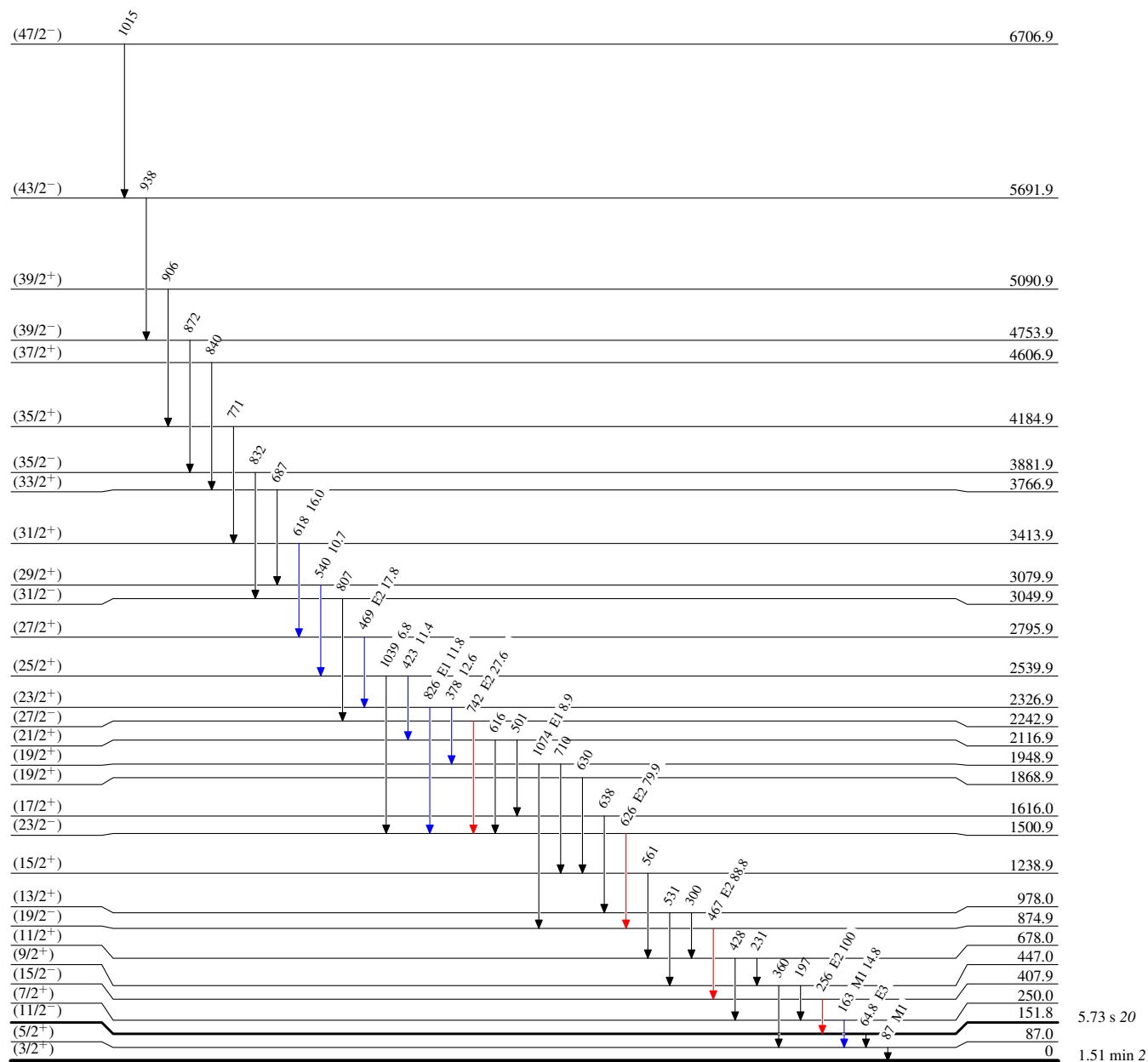
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Level Scheme

Intensities: Relative I_γ

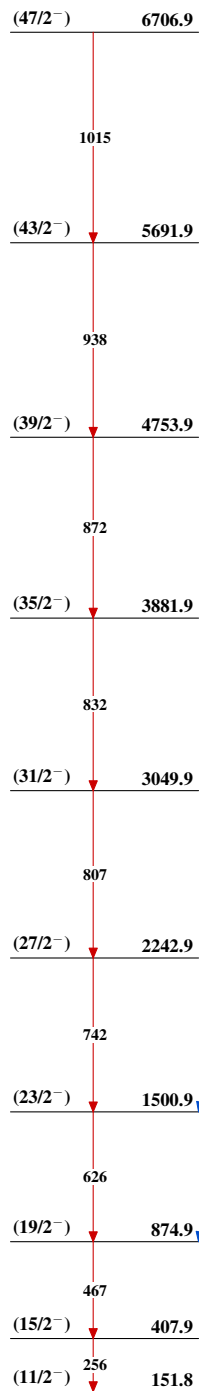
Legend

- $\longrightarrow$ $I_\gamma < 2\% \times I_\gamma^{\text{max}}$
 $\longrightarrow$ $I_\gamma < 10\% \times I_\gamma^{\text{max}}$
 $\longrightarrow$ $I_\gamma > 10\% \times I_\gamma^{\text{max}}$

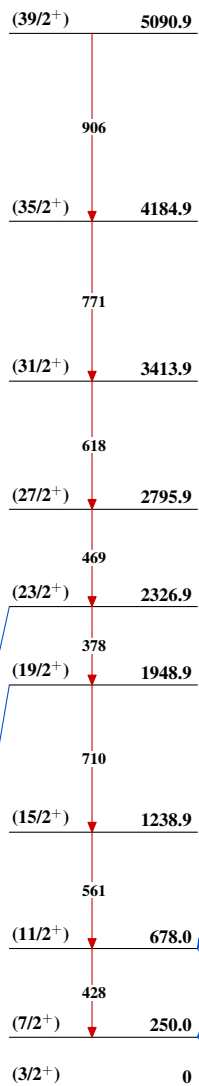
 $^{131}_{59}\text{Pr}_{72}$

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Band(A): Band,
configuration= $(\pi h_{11/2}[$
541], $\alpha=-1/2$)



Band(B): Band,
configuration= $(\pi g_{7/2}[$
413], $\alpha=-1/2$)



Band(C): Band,
configuration= $(\pi g_{7/2}[$
413], $\alpha=+1/2$)

