

$^{92}\text{Mo}(^{86}\text{Sr},\text{n}2\text{p}\gamma)$ 2014Pe02

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Full Evaluation	Jin Wu	NDS 206,1 (2025)	29-Oct-2024

2014Pe02: The excited states of ^{175}Pt were populated via the $^{92}\text{Mo}(^{86}\text{Sr},\text{n}2\text{p}\gamma)$ reaction at $E(^{92}\text{Mo})=403$ MeV from K130 cyclotron at JYFL facility, using a target of $600\text{ }\mu\text{g}/\text{cm}^2$ thick, 98% enriched ^{92}Mo . Measured $\text{E}\gamma$, $\text{I}\gamma$, $\gamma\gamma$ -coin, $\alpha\gamma$ -coin, $\alpha\gamma\gamma$ -coin, $\gamma(\theta)$, $\gamma(\text{anisotropy})$, $\text{E}\alpha$ using RITU separator, JUROGAM I detector array of 43 Eurogam phase I and GASP type Ge detectors with BGO anti-Compton shields. Deduced levels, J, π , bands. Comparison with cranked shell-model calculations. Recoil- α decay tagging method.

 ^{175}Pt Levels

E(level) [†]	J ^π [‡]	T _{1/2}	Comments
0.0 ^{&}	(7/2 ⁻)	2.38 s 4	T _{1/2} : 2.43 4 s from 2014Pe02, corrected to 2.48 4 s by Erratum to the original paper (published in Phys Rev C 89, 049902 (2014)). Additional information 1.
0+x [#]	(13/2 ⁺)		
131.2 ^a 4	(9/2 ⁻)		
138.3+x [@] 4	(11/2 ⁺)		
328.72+x [#] 35	(17/2 ⁺)		
382.23+x [@] 32	(15/2 ⁺)		
423.1 ^{&} 4	(11/2 ⁻)		
545.7 ^a 5	(13/2 ⁻)		
744.5+x [@] 4	(19/2 ⁺)		
765.2+x [#] 5	(21/2 ⁺)		
803.3 ^{&} 5	(15/2 ⁻)		
970.0 ^a 7	(17/2 ⁻)		
1173.0+x [@] 5	(23/2 ⁺)		
1191.8 ^{&} 7	(19/2 ⁻)		
1231.8+x [#] 6	(25/2 ⁺)		
1391.7 ^a 8	(21/2 ⁻)		
1629.1 ^{&} 8	(23/2 ⁻)		
1663.6+x [@] 6	(27/2 ⁺)		
1738.4+x [#] 7	(29/2 ⁺)		
1854.0 ^a 9	(25/2 ⁻)		
2116.5 ^{&} 10	(27/2 ⁻)		
2212.7+x [@] 8	(31/2 ⁺)		
2293.0+x [#] 8	(33/2 ⁺)		
2356.6 ^a 10	(29/2 ⁻)		
2646.6 ^{&} 12	(31/2 ⁻)		
2817.1+x [@] 9	(35/2 ⁺)		
2889.6 ^a 13	(33/2 ⁻)		
2896.1+x [#] 9	(37/2 ⁺)		
3200.7 ^{&} 14	(35/2 ⁻)		
3445.7 ^a 14	(37/2 ⁻)		
3475.9+x [@] 11	(39/2 ⁺)		
3542.3+x [#] 11	(41/2 ⁺)		
3787.7 ^{&} 15	(39/2 ⁻)		
4033.0 ^a 17	(41/2 ⁻)		

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$^{92}\text{Mo}(^{86}\text{Sr},n2p\gamma)$ **2014Pe02** (continued) ^{175}Pt Levels (continued)

E(level) [†]	J ^π [‡]
4177.5+x [@] 14	(43/2 ⁺)
4227.8+x [#] 13	(45/2 ⁺)
4406.3 ^{&} 17	(43/2 ⁻)
4642.0 ^a 19	(45/2 ⁻)
4911.5+x [@] 24	(47/2 ⁺)
4947.9+x [#] 14	(49/2 ⁺)

[†] From a least-squares fit to E γ 's.[‡] From **2014Pe02**, based on $\gamma(\theta)$, anisotropy ratios, α -decay and ground-state properties of ^{179}Hg , ^{171}Os and ^{175}Pt , and systematics of band structures of nuclei in this mass region.[#] Band(A): Band based on (13/2⁺), $\alpha=+1/2$. Configuration= $\nu 7/2[503]$, $\nu 7/2[514]$.[@] Band(a): Band based on (11/2⁺), $\alpha=-1/2$. Configuration= $\nu 7/2[503]$, $\nu 7/2[514]$.[&] Band(B): Band based on (7/2⁻), $\alpha=-1/2$. Configuration=mixed $\nu i_{13/2}$.^a Band(b): Band based on (9/2⁻), $\alpha=+1/2$. Configuration=mixed $\nu i_{13/2}$. $\gamma(^{175}\text{Pt})$ Anisotropy ratio $R=I\gamma(157.60^\circ)/[I\gamma(94.16^\circ)+I\gamma(85.84^\circ)]$.

E γ	I γ	E _i (level)	J _i ^π	E _f	J _f ^π	Mult. [†]	Comments
122.6 [‡] 7	0.3 2	545.7	(13/2 ⁻)	423.1	(11/2 ⁻)		
130.9 6	8.2 5	131.2	(9/2 ⁻)	0.0	(7/2 ⁻)	D	A ₂ =-0.15 8; A ₄ =0.0 2 R(θ)=0.82 6.
138.6 6	2.4 4	138.3+x	(11/2 ⁺)	0+x	(13/2 ⁺)	Q	R(θ)=1.3 2.
244.1 4	8.7 5	382.23+x	(15/2 ⁺)	138.3+x	(11/2 ⁺)	Q	A ₂ =+0.09 2; A ₄ =-0.05 4 R(θ)=1.16 8.
257.1 8	3.5 5	803.3	(15/2 ⁻)	545.7	(13/2 ⁻)		
291.8 6	8 1	423.1	(11/2 ⁻)	131.2	(9/2 ⁻)	D	A ₂ =-0.13 8; A ₄ =+0.1 2 R(θ)=0.92 8.
328.6 4	100 2	328.72+x	(17/2 ⁺)	0+x	(13/2 ⁺)	Q	A ₂ =+0.21 1; A ₄ =-0.05 2 R(θ)=1.31 5.
362.5 5	24.1 8	744.5+x	(19/2 ⁺)	382.23+x	(15/2 ⁺)	Q	A ₂ =+0.09 3; A ₄ =-0.03 5 R(θ)=1.11 5.
380.3 4	21 2	803.3	(15/2 ⁻)	423.1	(11/2 ⁻)		
382.2 4	24 4	382.23+x	(15/2 ⁺)	0+x	(13/2 ⁺)		R(θ)=1.0 2.
388.5 4	16.1 8	1191.8	(19/2 ⁻)	803.3	(15/2 ⁻)	Q	A ₂ =+0.11 2; A ₄ =+0.01 2 R(θ)=1.13 7.
407.8 4	5.8 4	1173.0+x	(23/2 ⁺)	765.2+x	(21/2 ⁺)		
414.3 5	35 2	545.7	(13/2 ⁻)	131.2	(9/2 ⁻)		
415.8 4	9.0 5	744.5+x	(19/2 ⁺)	328.72+x	(17/2 ⁺)		
421.7 4	22 3	1391.7	(21/2 ⁻)	970.0	(17/2 ⁻)		
423.2 4	12 2	423.1	(11/2 ⁻)	0.0	(7/2 ⁻)		R(θ)=0.9 2.
424.3 4	28 3	970.0	(17/2 ⁻)	545.7	(13/2 ⁻)		
428.6 4	17.0 9	1173.0+x	(23/2 ⁺)	744.5+x	(19/2 ⁺)	Q	R(θ)=1.1 2.
431.4 8	5 2	1663.6+x	(27/2 ⁺)	1231.8+x	(25/2 ⁺)		
436.4 4	63 2	765.2+x	(21/2 ⁺)	328.72+x	(17/2 ⁺)	Q	A ₂ =+0.23 4; A ₄ =-0.03 5 R(θ)=1.30 8.
437.3 5	14 2	1629.1	(23/2 ⁻)	1191.8	(19/2 ⁻)	Q	R(θ)=1.3 2.
462.3 5	21 2	1854.0	(25/2 ⁻)	1391.7	(21/2 ⁻)		

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$^{92}\text{Mo}(^{86}\text{Sr}, \text{n}2\text{p}\gamma)$ 2014Pe02 (continued) $\gamma(^{175}\text{Pt})$ (continued)

E_γ	I_γ	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. [†]	Comments
466.4 4	44 2	1231.8+x	(25/2 ⁺)	765.2+x	(21/2 ⁺)	Q	$A_2=+0.29$ 2; $A_4=+0.02$ 3 $R(\theta)=1.4$ 1. $R(\theta)=1.0$ 2.
487.4 6	9 2	2116.5	(27/2 ⁻)	1629.1	(23/2 ⁻)		
490.7 4	11.2 5	1663.6+x	(27/2 ⁺)	1173.0+x	(23/2 ⁺)		
502.6 5	15 2	2356.6	(29/2 ⁻)	1854.0	(25/2 ⁻)		
506.6 4	30.8 9	1738.4+x	(29/2 ⁺)	1231.8+x	(25/2 ⁺)	Q	$R(\theta)=1.3$ 2.
530.1 6	6 2	2646.6	(31/2 ⁻)	2116.5	(27/2 ⁻)		
533.0 7	10 3	2889.6	(33/2 ⁻)	2356.6	(29/2 ⁻)		
549.1 5	7.1 8	2212.7+x	(31/2 ⁺)	1663.6+x	(27/2 ⁺)		
554.1 7	4 2	3200.7	(35/2 ⁻)	2646.6	(31/2 ⁻)		
554.6 4	19.6 8	2293.0+x	(33/2 ⁺)	1738.4+x	(29/2 ⁺)	Q	$R(\theta)=1.4$ 2.
556.1 7	3.6 7	3445.7	(37/2 ⁻)	2889.6	(33/2 ⁻)		
587.0 7	3.6 7	3787.7	(39/2 ⁻)	3200.7	(35/2 ⁻)		
587.3 8	4.4 9	4033.0	(41/2 ⁻)	3445.7	(37/2 ⁻)		
603.1 4	14.3 5	2896.1+x	(37/2 ⁺)	2293.0+x	(33/2 ⁺)		
604.4 5	4.2 6	2817.1+x	(35/2 ⁺)	2212.7+x	(31/2 ⁺)		
609 1	2.5 7	4642.0	(45/2 ⁻)	4033.0	(41/2 ⁻)		
618.6 8	2.6 5	4406.3	(43/2 ⁻)	3787.7	(39/2 ⁻)		
646.2 6	4.2 4	3542.3+x	(41/2 ⁺)	2896.1+x	(37/2 ⁺)		
658.8 5	1.3 3	3475.9+x	(39/2 ⁺)	2817.1+x	(35/2 ⁺)		
685.5 6	1.8 3	4227.8+x	(45/2 ⁺)	3542.3+x	(41/2 ⁺)		
701.6 9	0.6 1	4177.5+x	(43/2 ⁺)	3475.9+x	(39/2 ⁺)		
720.1 7	0.8 2	4947.9+x	(49/2 ⁺)	4227.8+x	(45/2 ⁺)		
734 [‡] 2	0.8 2	4911.5+x	(47/2 ⁺)	4177.5+x	(43/2 ⁺)		

[†] From $\gamma(\theta)$ and anisotropy ratios; mult=Q refers to $\Delta J=2$, quadrupole transition and mult=D to $\Delta J=1$, dipole.

[‡] Placement of transition in the level scheme is uncertain.

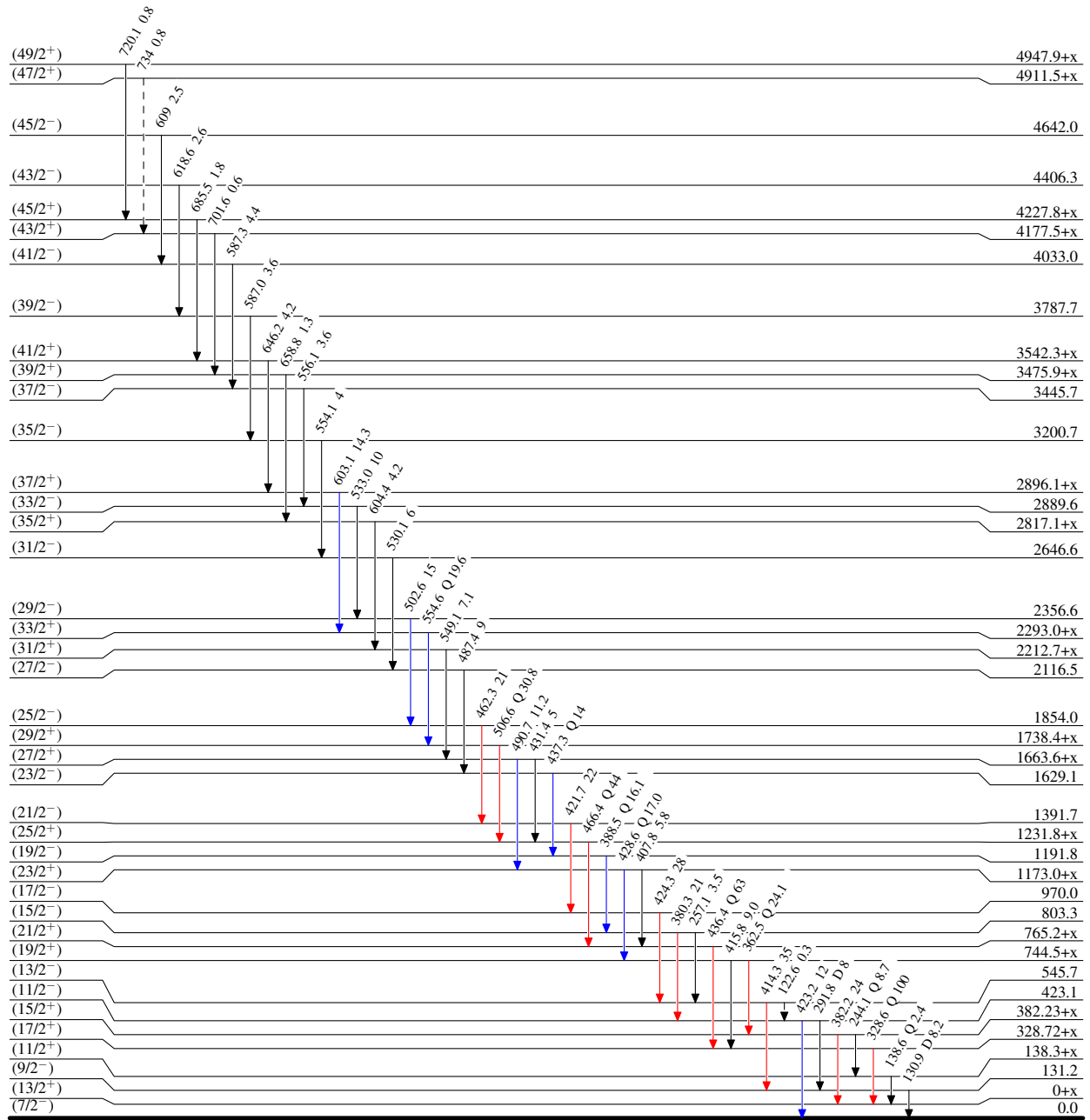
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Legend

Level Scheme

Intensities: Relative I_γ

- $I_\gamma < 2\% \times I_\gamma^{\max}$
 $I_\gamma < 10\% \times I_\gamma^{\max}$
 $I_\gamma > 10\% \times I_\gamma^{\max}$
 γ Decay (Uncertain)



2.38 s 4

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