^{187}Re(^{136}Xe,Xγ) 2016Re02

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	T. D. Johnson, Balraj Singh	NDS 142, 1 (2017)	15-Apr-2017

Includes ^{186}W(^{136}Xe,Xγ) and ^{192}Os(^{136}Xe,Xγ).

2016Re02: ^{136}Xe beam at E≈6 MeV/nucleon from ATLAS-ANL facility. Measured Eγ, Iγ, triple-fold $\gamma\gamma$-coin and (x ray)γ-coin, γ(t), $\gamma\gamma$(t), angular correlations using Gammasphere array. In-beam and out-of-beam experiments using pulsed beam. For investigation of longer-lived isomers, chopped beam was used. Deduced high-spin levels, J, π, bands, isomers.

As stated by 2016Re02 (see reference 29 in paper), details of this work are to be published.

^{189}Re Levels

E(level)[†]	J$^\pi$[‡]	T$_{1/2}$[#]	Comments
125[@] *3*	(9/2$^-$)		Additional information 1. E(level),J$^\pi$: from (t,α),(pol t,α) (1976Hi08,1977Hi06).
302.6[@] *2*	(11/2$^-$)		
524.0[@] *2*	13/2$^-$		
669.6[&] *2*	13/2$^-$		
737.8[@] *2*	15/2$^-$		
935.6[&] *3*	15/2$^-$		
1017.7[@] *3*	17/2$^-$		
1149.8[&] *3*	17/2$^-$		
1247.0[@] *3*	19/2$^-$		
1440.4[&] *3*	19/2$^-$		
1590.3[@] *4*	21/2$^-$		
1678.9[&] *3*	21/2$^-$		
1692.9 *5*	25/2$^-$	51 ns *17*	%IT=100 T$_{1/2}$: from $\gamma\gamma$(t) (2016Re02).
1770.9 *6*	29/2$^+$	223 μs *14*	%IT=100 T$_{1/2}$: from γ(t) (2016Re02).

[†] From least-squares fit to Eγ values, by keeping the energy of the 125-keV level fixed, and assuming 0.3 keV uncertainty for each γ-ray energy when stated to nearest tenth of a keV, 1 keV otherwise.

[‡] From 2016Re02, based on multipolarities of γ transitions from $\gamma\gamma(\theta)$ and conversion coefficients deduced from intensity balance arguments, and band structures (2016Re02).

[#] From γ(t) or $\gamma\gamma$(t) (2016Re02).

[@] Band(A): π9/2[514].

[&] Band(B): π9/2[514]⊗2$^+$ of γ band.

γ(^{189}Re)

E$_\gamma$	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	Mult.[†]	δ[†]	α[‡]	Comments
(14.0)	1692.9	25/2$^-$	1678.9	21/2$^-$				E$_\gamma$: from level-energy difference.
78.0	1770.9	29/2$^+$	1692.9	25/2$^-$	(M2)		118.4	Mult.: from conversion coefficient deduced from K-x ray intensity and photon intensity.
89	1678.9	21/2$^-$	1590.3	21/2$^-$				
102.6	1692.9	25/2$^-$	1590.3	21/2$^-$				
132	1149.8	17/2$^-$	1017.7	17/2$^-$				
146	669.6	13/2$^-$	524.0	13/2$^-$				
177.5	302.6	(11/2$^-$)	125	(9/2$^-$)	(M1+E2)	0.22 *8*	0.988 *24*	

Continued on next page (footnotes at end of table)

^{187}Re(^{136}Xe,Xγ) 2016Re02 (continued)

$\gamma(^{189}Re)$ (continued)

E_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.[†]	δ[†]	α[‡]
194	1440.4	19/2$^-$	1247.0	19/2$^-$			
198	935.6	15/2$^-$	737.8	15/2$^-$			
213.8	737.8	15/2$^-$	524.0	13/2$^-$	(M1+E2)	0.20 *10*	0.589 *18*
214.2	1149.8	17/2$^-$	935.6	15/2$^-$			
221.6	524.0	13/2$^-$	302.6	(11/2$^-$)	(M1+E2)	0.35 *8*	0.511 *17*
229.3	1247.0	19/2$^-$	1017.7	17/2$^-$	(M1+E2)	0.2 *+2−1*	0.49 *3*
238.5	1678.9	21/2$^-$	1440.4	19/2$^-$			
265.9	935.6	15/2$^-$	669.6	13/2$^-$			
279.8	1017.7	17/2$^-$	737.8	15/2$^-$	(M1+E2)	0.3 *2*	0.273 *22*
290.7	1440.4	19/2$^-$	1149.8	17/2$^-$			
343.3	1590.3	21/2$^-$	1247.0	19/2$^-$			
367.0	669.6	13/2$^-$	302.6	(11/2$^-$)			
399.1	524.0	13/2$^-$	125	(9/2$^-$)			
411.6	935.6	15/2$^-$	524.0	13/2$^-$			
412.0	1149.8	17/2$^-$	737.8	15/2$^-$			
422.7	1440.4	19/2$^-$	1017.7	17/2$^-$			
431.9	1678.9	21/2$^-$	1247.0	19/2$^-$			
435.1	737.8	15/2$^-$	302.6	(11/2$^-$)			
480.2	1149.8	17/2$^-$	669.6	13/2$^-$			
493.7	1017.7	17/2$^-$	524.0	13/2$^-$			
504.7	1440.4	19/2$^-$	935.6	15/2$^-$			
509.3	1247.0	19/2$^-$	737.8	15/2$^-$			
529.1	1678.9	21/2$^-$	1149.8	17/2$^-$			
544.6	669.6	13/2$^-$	125	(9/2$^-$)			
572.6	1590.3	21/2$^-$	1017.7	17/2$^-$			
626	1149.8	17/2$^-$	524.0	13/2$^-$			
633	935.6	15/2$^-$	302.6	(11/2$^-$)			
661.2	1678.9	21/2$^-$	1017.7	17/2$^-$			
703	1440.4	19/2$^-$	737.8	15/2$^-$			

[†] From $\gamma\gamma(\theta)$ data unless otherwise stated. Values of mixing ratios are read from plot shown in the right panel of Fig. 6 in 2016Re02.

[‡] Additional information 2.

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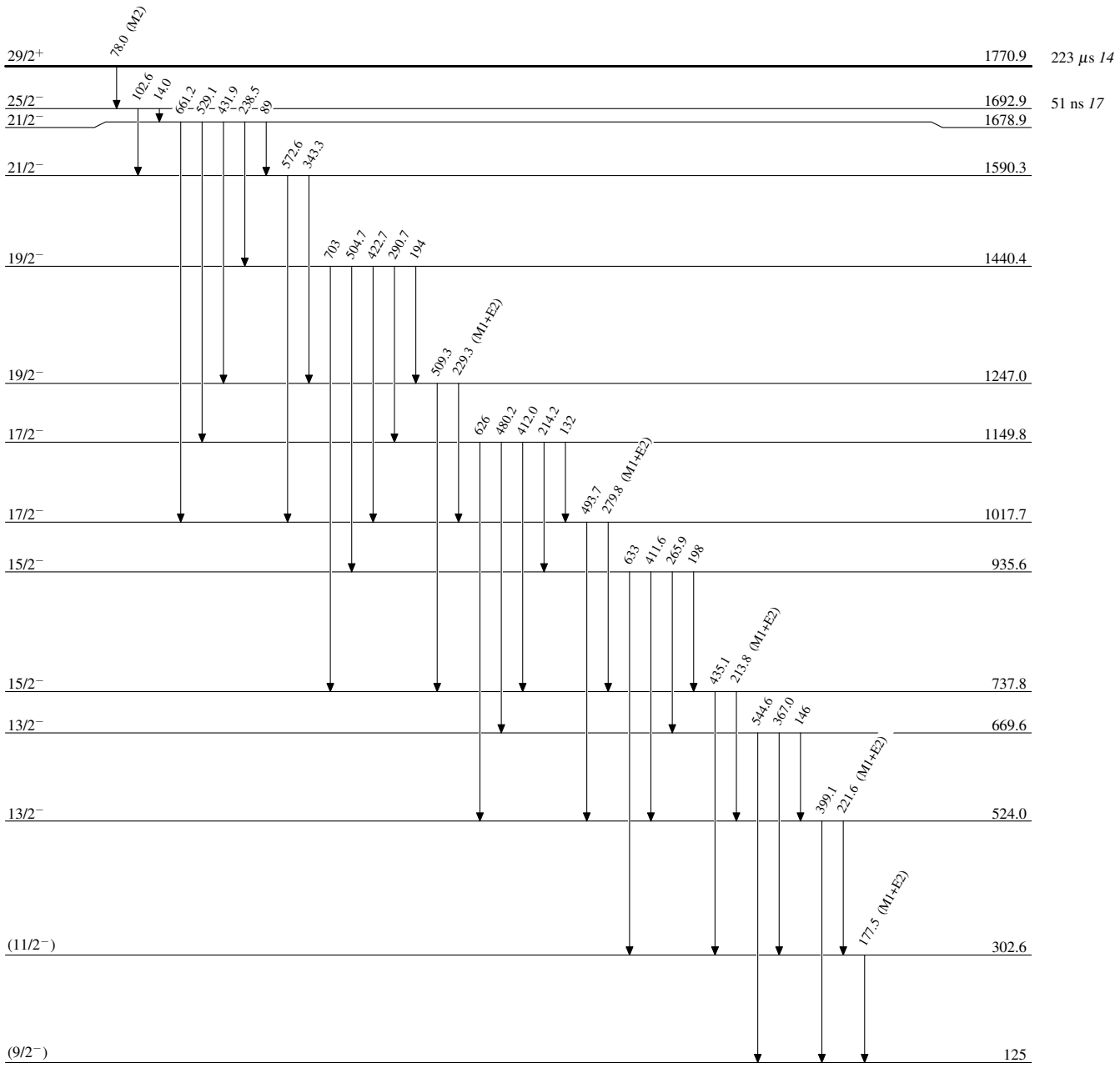
Legend

γ Decay (Uncertain)

Level Scheme



$^{189}_{75}Re_{114}$

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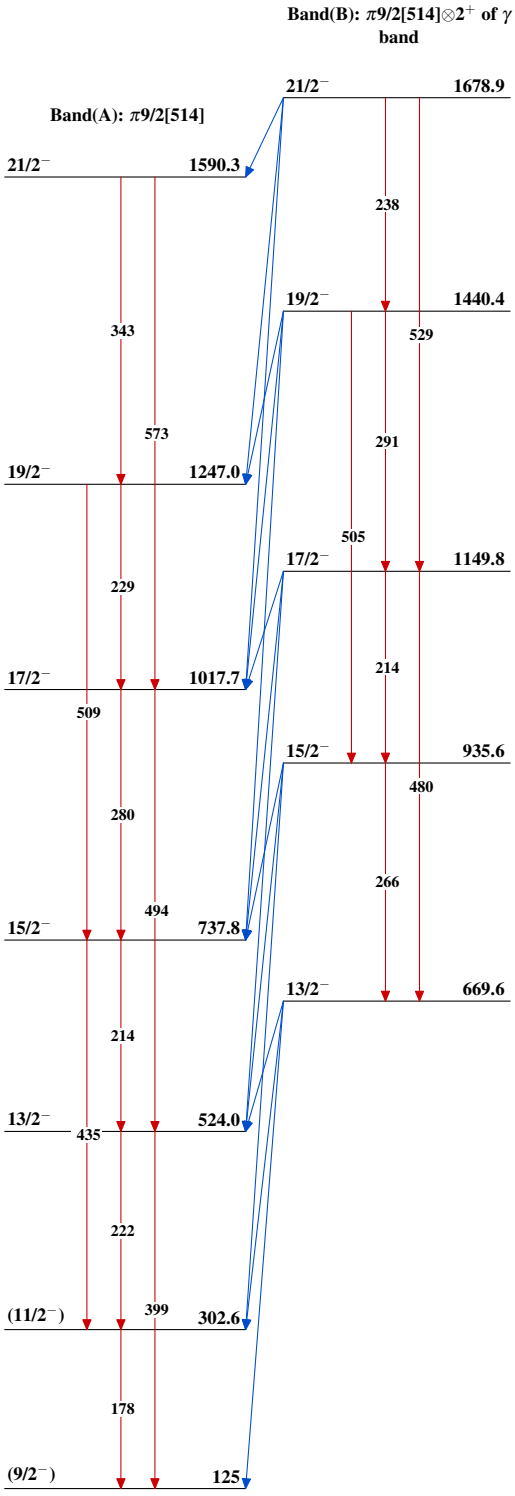

$^{189}_{75}Re_{114}$