

(HI,xn γ) **1986Ha09,1998Fo08**

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	D. De Frenne	NDS 110, 2081 (2009)	1-Mar-2009

1986Ha09: $^{100}\text{Mo}(^7\text{Li,pn}\gamma)$; E(Li)=49 MeV. Measured: coin with energetic ejectiles and reaction gammas. Looked for backbending systematics.

1998Fo08: $^{173}\text{Yb}(^{24}\text{Mg,X})$: fission of ^{197}Pb formed in this reaction measured: E_γ , I_γ , $\gamma\gamma$. Deduced: ^{103}Ru levels, J^π , band structure. GAMMASPHERE array used.

2005Re11: $^{100}\text{Mo}(^{136}\text{Xe,X})^{103}\text{Ru}$. E=700 MeV, Measured: E_γ , I_γ (particle) γ . Deduced: high spin levels. J^π .

 ^{103}Ru Levels

E(level)	J^π [†]	Comments
0.0	$3/2^+$	
213.56 [‡] 7	$7/2^+$	E(level): from Adopted Levels, gammas.
238.2 [#] 7	$11/2^-$	
653.4 [#] 8	$15/2^-$	
773.6 [‡] 10	$11/2^+$	
1300.8 [#] 8	$19/2^-$	
1442.6 [‡] 15	$15/2^+$	
2129.7 [#] 9	$23/2^-$	
2131.6 [‡] 18	$19/2^+$	
2679.6 [‡] 20	$23/2^+$	
3078.7 [#] 18	$27/2^-$	
3275.6 [‡] 23	$(27/2^+)$	
4058.6 [‡] 25	$(31/2^+)$	
4083.0 [#] 19	$(31/2^-)$	
5028 [‡] 3	$(35/2^+)$	
5127 [#] 2	$(35/2^-)$	Calculated by evaluator from measured E_γ observed only by 2005Re11 .

[†] From $\gamma\gamma$ coincidences, systematics and band structure (**1998Fo08**).

[‡] Band(A): $7/2^+$ band (**1998Fo08**).

[#] Band(B): $11/2^-$ band (**1998Fo08**).

 $\gamma(^{103}\text{Ru})$

E_γ [‡]	I_γ	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. [†]	Comments
(24.6 7)		238.2	$11/2^-$	213.56	$7/2^+$		E_γ : not observed in (HI,xn γ) taken from Adopted Levels levels, gammas.
213.17 16	1000	213.56	$7/2^+$	0.0	$3/2^+$	E2	E_γ : not explicitly given in (HI,xn γ) taken from Adopted Levels, gammas.
415.2 2	1000 [#]	653.4	$15/2^-$	238.2	$11/2^-$	E2	E_γ : from fission of ^{197}Pb formed in $^{24}\text{Mg}+^{173}\text{Yb}$ (1998Fo08).
547.9 4	291 [@] 30	2679.6	$23/2^+$	2131.6	$19/2^+$	E2	
559.9 2	743 [@] 50	773.6	$11/2^+$	213.56	$7/2^+$	E2	E_γ : from fission of ^{197}Pb formed in $^{24}\text{Mg}+^{173}\text{Yb}$ (1998Fo08).
595.8 4	244 [@] 30	3275.6	$(27/2^+)$	2679.6	$23/2^+$	(E2)	
647.4 2	498 [#] 40	1300.8	$19/2^-$	653.4	$15/2^-$	E2	
668.7 2	568 [@] 40	1442.6	$15/2^+$	773.6	$11/2^+$	E2	

Continued on next page (footnotes at end of table)

(HI,xn γ) [1986Ha09,1998Fo08](#) (continued) $\gamma(^{103}\text{Ru})$ (continued)

E_γ [‡]	I_γ	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. [†]	Comments
687.9 4	439 [@] 40	2131.6	19/2 ⁺	1442.6	15/2 ⁺	E2	
782.5 6	90 [@] 15	4058.6	(31/2 ⁺)	3275.6	(27/2 ⁺)	(E2)	E_γ : from fission of ^{197}Pb formed in $^{24}\text{Mg}+^{173}\text{Yb}$ (1998Fo08).
828.9 4	204 [#] 25	2129.7	23/2 ⁻	1300.8	19/2 ⁻	E2	E_γ : from fission of ^{197}Pb formed in $^{24}\text{Mg}+^{173}\text{Yb}$ (1998Fo08).
947.1 5	50 [#] 10	3078.7	27/2 ⁻	2129.7	23/2 ⁻	E2	
969.0 6	16 [@] 5	5028	(35/2 ⁺)	4058.6	(31/2 ⁺)	(E2)	E_γ : from fission of ^{197}Pb formed in $^{24}\text{Mg}+^{173}\text{Yb}$ (1998Fo08).
1004.3 6	10 [#] 5	4083.0	(31/2 ⁻)	3078.7	27/2 ⁻	(E2)	
1044 2		5127	(35/2 ⁻)	4083.0	(31/2 ⁻)		Only observed by 2005Re11 .

[†] Stretched intraband quadrupole transitions assumed E2.

[‡] Unless noted otherwise, from difference between levels.

[#] Relative to $I_\gamma=1000$ for 415.2 γ .

[@] Relative to $I_\gamma=1000$ for 213.56 γ .

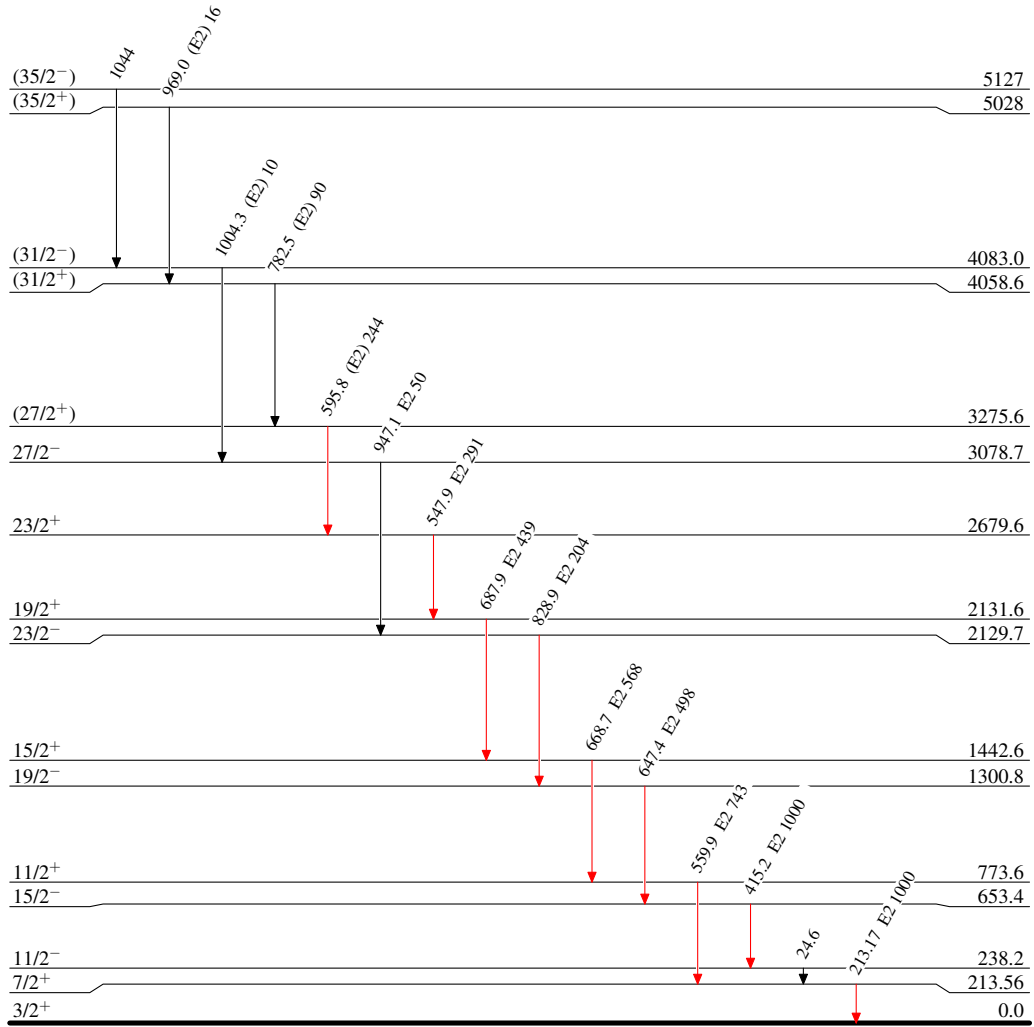
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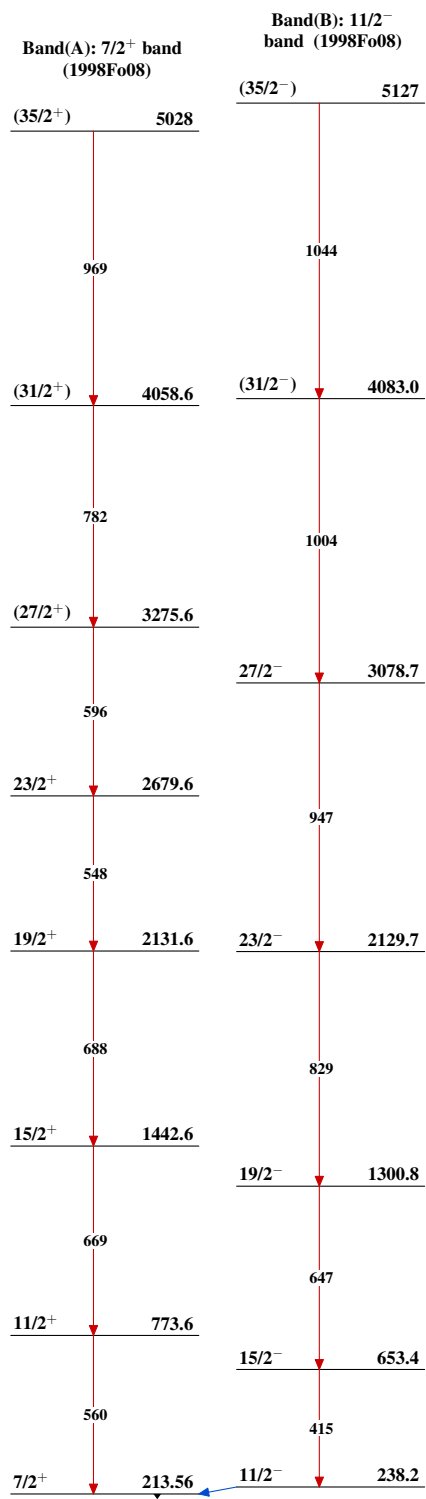
Legend

Level Scheme

Intensities: Type not specified

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

 $^{103}_{44}\text{Ru}_{59}$

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