

(HI,xn γ) 1999Ve12,2002Ve08

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	S. Kumar(a), J. Chen(b) and F. G. Kondev		NDS 137, 1 (2016)	31-May-2016

1999Ve12: ¹⁷⁶Yb(²⁸Si,F γ) E(²⁸Si)=145 MeV, the beam was delivered by the Vivitron accelerator at Strasbourg. Target: 1.5 mg/cm² of ¹⁷⁶Yb with 15 mg/cm² Au backing. Detectors: EUROGAM2 array (54 escape-suppressed Ge detectors), identification through the detection of complementary fragment. Measured: E γ , $\gamma\gamma$, $\gamma\gamma\gamma$.
2002Ve08: ²⁰⁸Pb(¹⁸O,F γ), E(¹⁸O)=85 MeV, beam by Vivitron accelerator of IReS at Strasbourg. Target: 20 mg/cm² of ²⁰⁸Pb. Detectors: Euroball IV array (15 cluster Ge detectors, 26 clover Ge detectors and 30 single-crystal Ge detectors). Measured E γ , I γ , $\gamma\gamma$, $\gamma\gamma\gamma$.

¹⁰⁹Rh Levels

E(level) [†]	J π [‡]	E(level) [†]	J π [‡]	E(level) [†]	J π [‡]	E(level) [†]	J π [‡]
0.0 [#]	7/2 ⁺	641.8 ^a 11	(11/2 ⁺)	1454.7 ^a 12	(15/2 ⁺)	2336 [@] 3	(17/2 ⁻)
206.0 [#] 8	9/2 ⁺	745.0 [#] 10	(13/2 ⁺)	1653.0 [@] 25	(13/2 ⁻)	2558.5 ^b 19	(21/2 ⁻)
226.0 ^{&} 10	3/2 ⁺	768.0 ^{&} 18	(11/2 ⁺)	1675.7 ^a 13	(17/2 ⁺)	2720.1 18	
258.0 15	(1/2) ⁺	1063.0 [@] 23	(9/2 ⁻)	1960.0 ^{&} 23	(19/2 ⁺)	2874.5 ^b 21	(23/2 ⁻)
374.0 [@] 18	1/2 ⁻	1072.8 ^a 11	(13/2 ⁺)	1975.1 [#] 13	(19/2 ⁺)	3000.1 21	
410.0 ^{&} 15	(7/2 ⁺)	1202.2 [#] 10	(15/2 ⁺)	2098.5 ^b 12	(17/2 ⁻)	3345.1 23	
530.0 [#] 8	(11/2 ⁺)	1292.0 ^{&} 20	(15/2 ⁺)	2250.1 [#] 15	(21/2 ⁺)		
623.0 [@] 20	(5/2 ⁻)	1444.1 [#] 11	(17/2 ⁺)	2297.5 ^b 16	(19/2 ⁻)		

[†] From a least-squares fit to γ -ray energies.
[‡] From 2002Ve08 based on band structure, unless otherwise stated.
[#] Band(A): $\pi g_{9/2}$ band.
[@] Band(B): $\pi 1/2[301]$ band.
[&] Band(C): $\pi(g_{7/2}$ or $d_{5/2})$ band.
^a Band(D): Band based on (11/2⁺).
^b Band(E): $\Delta J=1$ band based on (17/2⁻).

$\gamma(^{109}\text{Rh})$

E γ [†]	E _i (level)	J π _i	E _f	J π _f	E γ [†]	E _i (level)	J π _i	E _f	J π _f
32 [‡]	258.0	(1/2) ⁺	226.0	3/2 ⁺	423 1	2098.5	(17/2 ⁻)	1675.7	(17/2 ⁺)
116 1	374.0	1/2 ⁻	258.0	(1/2) ⁺	431 1	1072.8	(13/2 ⁺)	641.8	(11/2 ⁺)
184 1	410.0	(7/2 ⁺)	226.0	3/2 ⁺	436 1	641.8	(11/2 ⁺)	206.0	9/2 ⁺
199 1	2297.5	(19/2 ⁻)	2098.5	(17/2 ⁻)	440 1	1063.0	(9/2 ⁻)	623.0	(5/2 ⁻)
206 1	206.0	9/2 ⁺	0.0	7/2 ⁺	457 1	1202.2	(15/2 ⁺)	745.0	(13/2 ⁺)
215 1	745.0	(13/2 ⁺)	530.0	(11/2 ⁺)	470 1	2720.1		2250.1	(21/2 ⁺)
226 [‡]	226.0	3/2 ⁺	0.0	7/2 ⁺	524 1	1292.0	(15/2 ⁺)	768.0	(11/2 ⁺)
242 1	1444.1	(17/2 ⁺)	1202.2	(15/2 ⁺)	530 1	530.0	(11/2 ⁺)	0.0	7/2 ⁺
249 1	623.0	(5/2 ⁻)	374.0	1/2 ⁻	531 1	1975.1	(19/2 ⁺)	1444.1	(17/2 ⁺)
261 1	2558.5	(21/2 ⁻)	2297.5	(19/2 ⁻)	539 1	745.0	(13/2 ⁺)	206.0	9/2 ⁺
280 1	3000.1		2720.1		590 1	1653.0	(13/2 ⁻)	1063.0	(9/2 ⁻)
316 1	2874.5	(23/2 ⁻)	2558.5	(21/2 ⁻)	603 1	1675.7	(17/2 ⁺)	1072.8	(13/2 ⁺)
324 1	530.0	(11/2 ⁺)	206.0	9/2 ⁺	644 1	2098.5	(17/2 ⁻)	1454.7	(15/2 ⁺)
328 1	1072.8	(13/2 ⁺)	745.0	(13/2 ⁺)	668 1	1960.0	(19/2 ⁺)	1292.0	(15/2 ⁺)
345 1	3345.1		3000.1		672 1	1202.2	(15/2 ⁺)	530.0	(11/2 ⁺)
358 1	768.0	(11/2 ⁺)	410.0	(7/2 ⁺)	683 1	2336	(17/2 ⁻)	1653.0	(13/2 ⁻)
382 1	1454.7	(15/2 ⁺)	1072.8	(13/2 ⁺)	699 1	1444.1	(17/2 ⁺)	745.0	(13/2 ⁺)

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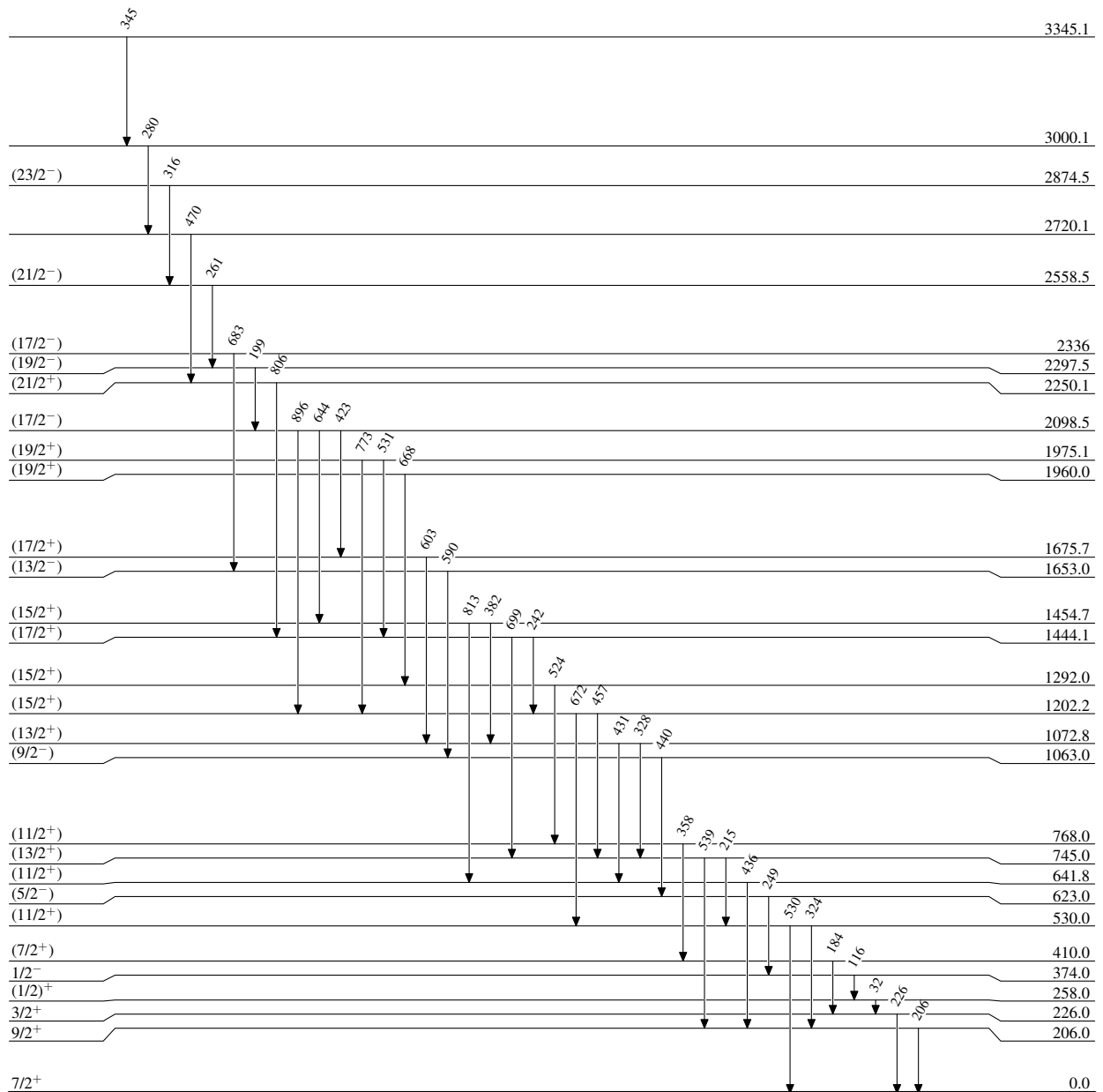
(HI,xn γ) [1999Ve12,2002Ve08](#) (continued)

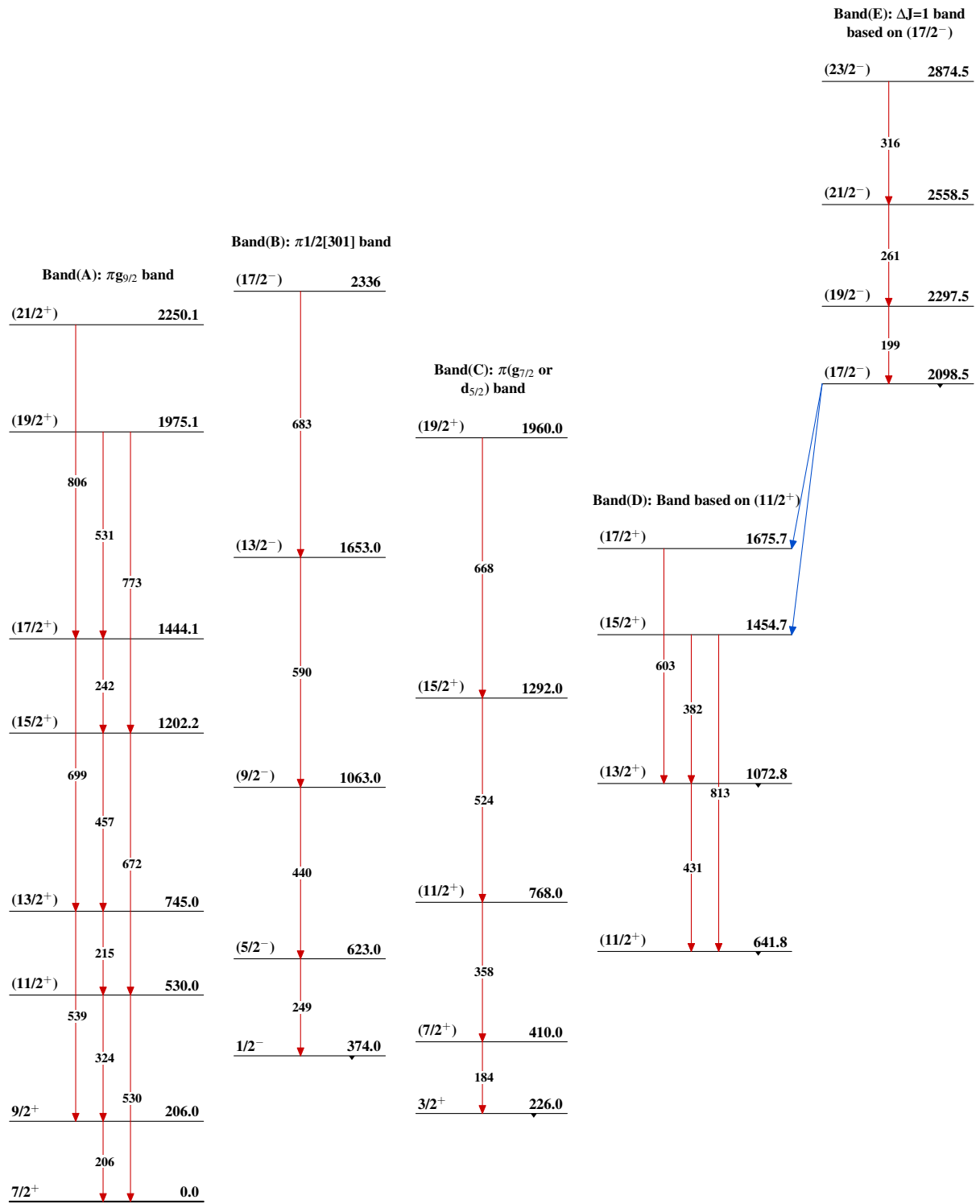
$\gamma(^{109}\text{Rh})$ (continued)

<u>E_γ</u> [†]	<u>$E_i(\text{level})$</u>	<u>J_i^π</u>	<u>E_f</u>	<u>J_f^π</u>
773 <i>l</i>	1975.1	(19/2 ⁺)	1202.2	(15/2 ⁺)
806 <i>l</i>	2250.1	(21/2 ⁺)	1444.1	(17/2 ⁺)
813 <i>l</i>	1454.7	(15/2 ⁺)	641.8	(11/2 ⁺)
896 <i>l</i>	2098.5	(17/2 ⁻)	1202.2	(15/2 ⁺)

[†] From [2002Ve08](#), $\Delta(E_\gamma)=1$ keV assumed by evaluators.

[‡] Rounded value from Adopted Gammas.

(HI,xn γ) 1999Ve12,2002Ve08Level Scheme $^{109}_{45}\text{Rh}_{64}$

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