Adopted Levels, Gammas

	Hist	tory	
Туре	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh and Jun Chen	NDS 172, 1 (2021)	31-Jan-2021
8081 19; S(p)=5255	5 18; $Q(\alpha) = -2194$ 19 2017	7Wa10	

 $Q(\beta^{-})=-378\ 25$; S(n)=8081 *19*; S(p)=5255 *18*; Q(α)=-2194 *1* S(2n)=18559 *22*, S(2p)=13737 *18* (2017Wa10).

Additional information 1.

Theory references: consult the NSR database (www.nndc.bnl.gov/nsr/) for ten primary references, nine dealing with nuclear structure calculations and one with decay modes and half-lives.

¹⁰⁰Rh Levels

Cross Reference (XREF) Flags

				A B C D	
E(level) [†]	$J^{\pi \ddagger}$	$T_{1/2}^{\#}$	XRE	F	Comments
0.0	1-	20.5 h 3	AB	G	$%ε+%β^+=100$ J ^π : spin from atomic-beam method (1975Ru06,1978Ru04) and parity from M1(84.02γ)-E1(74.78γ) cascade from 1 ⁺ , 158 level. Proposed configuration= $\pi(g_{9/2}^4, p_{1/2})_{1/2-} \otimes \nu(d_{5/2}, s_{1/2})_{1/2+} \text{ or } _{3/2+}$ (1965Ev05). T _{1/2} : unweighted average of 20.2 h <i>I</i> from 1995KeZZ and 20.8 h <i>I</i> from 1953Ma64. Others: 18 h <i>I</i> (1964An13), 21 h (1950Su29), 19.4 h 1(1948Li03). Additional information 2
32.686 <i>13</i>	(2)-	27.6 ns 6	AB	G	J ^{π} : E1 126.1 γ from 1 ⁺ ; M1+E2 32.68 γ to 1 ⁻ . Probable E3 γ from (5 ⁺) (see comment for 107.6 isomer). Absence of ε feeding from 0 ⁺ suggests J>1. Proposed configuration= $\pi(g_{9/2}^4, p_{1/2})_{1/2-} \otimes \nu(d_{5/2}, s_{1/2})_{3/2^+} \text{ or } 5/2_+$ (1965Ev05). T _{1/2} : from $\gamma\gamma$ (t) in ¹⁰⁰ Pd ε decay (1979En03). Other: 25.3 ns 31 from γ (t) in (n m) (1983Bi04)
74.782 14	(2)+	214.3 ns 20	AB	G	^(h) (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)
86.325 15	(1,2)	<0.35 ns	A	G	J^{π} : 53.7 γ (2) ⁻ and 86.3 γ to 1 ⁻ are not E2 (from RUL); log <i>ft</i> >7.8 from 0 ⁺ suggests J>1. Negative parity proposed by 1983Bi04 based on lifetime estimates.

¹⁰⁰Rh Levels (continued)

E(level) [†]	$J^{\pi \ddagger}$	$T_{1/2}^{\#}$	XREF	Comments
107.59 20	(5 ⁺)	4.6 min 2	BCDEF	$\%$ IT \approx 98.3; $\%\varepsilon + \%\beta^{+} \approx 1.7$ (1980Ba59)
				E(level): from the 74.9 γ -32.7 γ cascade in ¹⁰⁰ Rh IT decay, although, the
				decay scheme of the isomer does not seem as well established. However,
				proposed 74.9-32.7 and 32.7-74.9 cascades as the main decay modes are
				consistent with mult=E3 and M3 for one of the components of 74.9 γ and
				32.7 γ , respectively. Mult=E1 and M1+E2 for the second component of
				14.9γ and 32.1γ , respectively are known from ¹⁰⁰ Pd ε decay.
				mass region
				Possible configuration = $\pi(g_{2,r}^5)_{7/2+} \otimes \nu(d_{5/2}, s_{1/2})_{3/2+}$, based on similar
				configurations for other low-lying states proposed by $1965\text{Ev}05$.
				$T_{1/2}$: weighted average of 4.7 min 3 (1974Si18), 4.8 min 5 (1978Ki07), 4.5
				min 3 (1982MaZP), as also listed in 100 Rh IT decay.
136.332 25	(1)	<0.35 ns	A G	J^{π} : 61.6 γ to (2) ⁺ not E2 (from RUL); log <i>ft</i> =7.0 from 0 ⁺ parent.
139.85 3	(0,1)	<0.35 ns	A G	XREF: $G(?)$.
151 806 18	$(1)^{+}$	0.07 ns 1/	A C	J^{-1} : 139.97 to 1 not E2 (from KUL); log $f = 7.1$ from 0 ⁺ .
154.00 10	(0.1)	0.97 118 14	A	$J^{\pi}: \log ft = 7.8.2 \text{ from } 0^+$
158.804 21	1^+	<0.35 ns	A G	J^{π} : log ft=4.4 from 0 ⁺ .
				Proposed configuration= $\pi(g_{0,2}^{5})_{7/2+} \otimes \nu(d_{5/2},s_{1/2})_{5/2+}$ (1965Ev05).
				$T_{1/2}$: other: <0.5 ns in ε decay (1979En03).
160.685 22	$(0^{-} \text{ to } 3^{-})$	3.95 ns 21	G	J^{π} : 160.7 γ to 1 ⁻ , 128.0 γ to (2) ⁻ .
171.094 21	$(0^{-} \text{ to } 4^{-})$	<0.35 ns	G	J^{n} : 138.4 γ to (2) ⁻ .
219.38 22	(7°)	152 118 0	CDEF	%11=100 $\mu=\pm 4.69.14$ (1990Bi03 2014StZZ)
				J^{π} : $\Delta J=2$, E2 112.0 γ to (5 ⁺).
				$T_{1/2}$: unweighted average of 120 ns 5 (1984Ma30) in (⁶ Li,4n γ), 140 ns 5
				(1986Du04) in (⁷ Li,3n γ) and 135 ns 20 (1984Ma30) in (α ,2np γ).
				Different charge states of this isomer were produced from the breakup of
				¹¹² Sn nucleus in heavy-ion collisions (1995Gr14). Lifetime of the isomer
				in fully-ionized charge state is calculated to be 250 ns (1995Gr14).
				μ : from g factor=+0.67 2 (1990Bi03) by PAD method using T _{1/2} =140 ns 5
				$(1986Du04)$ in $(^{7}L1, 3n\gamma)$. Other: g factor=+0.09 6 with $1_{1/2}$ =105 ns $(1086Da7L1)$ in $(^{7}L1, 2n\gamma)$
				(1980RaZU) III ('L1,3Iγ). Configuration=παρια⊗udata (1990Bi03) from comparison of measured a
				factor with model predicted values. Some admixture of
				Configuration= $\pi g_{9/2} \otimes v g_{7/2}$ cannot be ruled out (1990Bi03).
221.79? 6	(0 to 3)		G	J^{π} : 85.5 γ to (1).
243.47 22	(6^+)		DEF	J^{π} : $\Delta J=1$, M1+E2 135.9 γ to (5 ⁺).
248.049 25	$(1,2)^+$	<0.35 ns	G	J^{n} : M1(+E2) 1/3.3 γ to (2) ⁺ , 96.2 γ to (1) ⁺ not E2 (from RUL).
255.75 11	(0,1,2) $(1,2,3)^+$	< 0.35 ns	G	J^{-1} : 119.4 γ to (1) not E2 (from KUL). I^{π} : M1(+E2) 207.2 γ to (2) ⁺
325.17 13	(<3)	<0.35 ns	G	J^{π} : 188.9 γ to (1).
329.4 5	(==)	0.76 ns 28	G	
357.54 24	(6+)		DEF	J^{π} : ΔJ=1, M1(+E2) 249.9γ to (5 ⁺), and ΔJ=1, D+Q 38.1γ to (7 ⁺).
376.7 4	$(0^{-} \text{ to } 4^{-})$	<0.35 ns	G	J^{π} : 343.9 γ to (2) ⁻ .
389.7 4	(≤ 4)	0.62 ns 28	G	J^{n} : 303.4 γ to (1,2).
438.02 23 445 51 4	(7^{+})	<0.35 ns	CDEF	J^{-1} : $\Delta J = 2$, $E2 \ 551.07$ to (5^{-1}) ; $\Delta J = 0$, $M1(+E2) \ 218.97$ to (7^{-1}) . $I^{\pi_1} \ 286 \ 7\alpha$ to 1^+
473.2 5	(20)	NO.00 IIS	G	5. 200.7 (01.
517.72 5	(≤3)	<0.35 ns	G	J^{π} : 365.9 γ to (1) ⁺ .
531.9 5			G	
561.0 5	(0+)		G	
887.1 <i>3</i>	(8+)		CDEF	J^{n} : $\Delta J=1$, M1(+E2) 448.4 γ to (7 ⁺).

Continued on next page (footnotes at end of table)

¹⁰⁰Rh Levels (continued)

1197.6 4 (9^+) D $J^+: \Delta J=2, (E2) 758.8y to (7^+); \Delta J=1, D 310.6y to (8^+).$ 1270.4 ${}^{@}$ 3 (8^-) <0.1 ps CDEF $J^+: \Delta J=0, E1 383.2y to (8^+) and \Delta J=1, E1 1050.9y to (7^+).$ $T_{1/2}: from Doppler broadening of 1050y peak (1984Ma30) in (6Li,4ny). 1403.5 {}^{@} (9,10) D F': \Delta J=1, E1 516.3y to (8^+); \Delta J=1, D(+Q) 133.1y to (8^-); band assignment. 1732.8 6 (9,10) D F': \Delta J=1, M1 (4E2) 326.6y to (10^-); \Delta J=2, (E2) 723.7y to (9^-); band assignment. 1800.9 {}^{@} (10^-) CDEF J^+: \Delta J=1, M1 (4E2) 326.6y to (10^-); \Delta J=2, (E2) 723.7y to (9^-); band assignment. 2127.5 {}^{@} 4 (10^-) CDEF J^+: \Delta J=1, M1 (4E2) 326.6y to (10^-); \Delta J=2, (E2) 723.7y to (9^-); band assignment. 2120.3 {}^{@} (10^-) CD J^+: 356, y and 745y to (10^-); band assignment. 2130.4 {}^{@} (10^-) CD J^+: 356, y and 745y to (10^-); band assignment. 256.4 {}^{@} (12^-) CDEF J^+: \Delta J=1, (M1) 468.3y to (12^-); band assignment. 2595.9 {}^{@} 4 (13^-) CDEF J^+: \Delta J=1, (M1) 468.3y to (12^-); band assignment. 2910.8 {}^{@} (12^-) C J^+: \Delta J=1, (M1) 468.3y to (12^-); band assignment. 349.6 {}^{@$	E(level) [†]	Jπ‡	$T_{1/2}^{\#}$	XREF	Comments
1270.4 ^(a) 3 (8 ⁻) <0.1 ps	1197.6 4	(9^{+})		D	J ^π : ΔJ=2, (E2) 758.8γ to (7 ⁺); ΔJ=1, D 310.6γ to (8 ⁺).
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	1270.4 [@] 3	(8 ⁻)	<0.1 ps	CDEF	J^{π} : $\Delta J=0$, E1 383.2 γ to (8 ⁺) and $\Delta J=1$, E1 1050.9 γ to (7 ⁺).
1403.5 $^{\&}$ 3(9 ⁻)CDEF J^{π} : $\Delta J=1$, El 516.3 y to (8 ⁺); $\Delta J=1$, D(+Q) 133.1 y to (8 ⁻); band assignment.1732.8 6(9,10)D J^{π} : 535.2 D to (9 ⁺).1800.9 $^{@}$ 4(10 ⁻)CDEF J^{π} : $\Delta J=1$, M1 397.5 y to (9 ⁻); band assignment.2127.5 $^{\&}$ 4(11 ⁻)CDEF J^{π} : $\Delta J=1$, M1 397.5 y to (9 ⁻); band assignment.2190.3 a 4(10 ⁻)CD J^{π} : $37.0 y$ to (9 ⁻); band assignment.2546.4 a 7(11 ⁻)C J^{π} : $356 y$ and 745 y to (10 ⁻); band assignment.2545.9 $^{@}$ 4(12 ⁻)CDEF J^{π} : $\Delta J=1$, (M1) 468.3 y to (11 ⁻); band assignment.2610.1 9(11 ⁻)C J^{π} : $364 y$ to (11 ⁻) ind 721 y to (10 ⁻); band assignment.2610.8 a 7(12 ⁻)C J^{π} : $364 y$ to (11 ⁻) ind 721 y to (10 ⁻); band assignment.3064.3 $^{\&}$ 4(13 ⁻)C J^{π} : $364 y$ to (12 ⁻); (E2) 936.9 y to (11 ⁻); band assignment.317.8 a 7(13 ⁻)C J^{π} : $307 y$ and $622 y$ to (12 ⁻); band assignment.3217.8 a 7(13 ⁻)C J^{π} : $364 y$ to (13 ⁻); 895 y to (12 ⁻); band assignment.3490.6 a 7(14 ⁻)CDEF J^{π} : $368 y$ to (13 ⁻); and 985 y to (12 ⁻); band assignment.3580.6 $^{@}$ 5(14 ⁻)CD X REF: D(?). J^{π} : $152 y$ to (13 ⁻) and 985 y to (12 ⁻); band assignment.3948.8 $^{\&}$ 7(15 ⁻)C J^{π} : $126 y$ to (14 ⁻) and 637 y to (15 ⁻).3948.8 $^{\&}$ 7(15 ⁻)C J^{π} : $1126 y$ to (14 ⁻			•		$T_{1/2}$: from Doppler broadening of 1050 γ peak (1984Ma30) in (⁶ Li,4n γ).
1732.8 6 $(9,10)$ D J^{π} : 535.2 D to (9^{+}) .1800.9 [@] 4 (10^{-}) CDEF J^{π} : $\Delta J=1, M1 397.5\gamma$ to (9^{-}) ; band assignment.2127.5 ^{&} 4 (11^{-}) CDEF J^{π} : $\Delta J=1, M1 (+E2) 326.6y to (10^{-}); \Delta J=2, (E2) 723.7\gamma to (9^{-}); band assignment.2190.3@ 4(10^{-})CDJ^{\pi}: 787.0y to (9^{-}); band assignment.2546.4@ 7(11^{-})CJ^{\pi}: 356\gamma and 745\gamma to (10^{-}); band assignment.2546.4@ 7(11^{-})CJ^{\pi}: 356\gamma and 745\gamma to (10^{-}); band assignment.2545.9@ 4(12^{-})CDEFJ^{\pi}: 354\gamma and 745\gamma to (10^{-}); band assignment.2595.9@ 4(12^{-})CDEFJ^{\pi}: 342\eta to (10^{-}); band assignment.2610.1 9(11^{-})CJ^{\pi}: 342\eta to (10^{-}); band assignment.2610.8# 7(12^{-})CJ^{\pi}: 364\gamma to (11^{-}); band assignment.3064.3& 4(13^{-})CJ^{\pi}: \Delta J=1, (M1) 468.3\gamma to (12^{-}); band assignment.317.8# 7(13^{-})CJ^{\pi}: \Delta J=1, (M1) 468.3\gamma to (12^{-}); band assignment.3217.8# 7(13^{-})CJ^{\pi}: \Delta J=1, (M1) 468.3\gamma to (12^{-}); band assignment.340.6# 7(14^{-})CDEFJ^{\pi}: \Delta J=1, (M1) 468.3\gamma to (12^{-}); band assignment.3490.6# 7(14^{-})CDEFJ^{\pi}: \Delta J=1, (M1) 468.3\gamma to (12^{-}); band assignment.3580.6@ 5(14^{-})CDEFJ^{\pi}: \Delta J=1, (M1) 468.3\gamma to (12^{-}); band assignment.3580.6@ 6(16^{-})$	1403.5 ^{&} 3	(9 ⁻)		CDEF	J^{π} : $\Delta J=1$, E1 516.3 γ to (8 ⁺); $\Delta J=1$, D(+Q) 133.1 γ to (8 ⁻); band assignment.
1800.9 ⁽⁶⁾ 4 (10 ⁻) CDEF $J^{\pi}: \Delta J=1, M1 397.5\gamma to (9^-); band assignment. 217.5& 4 (11-) CDEF J^{\pi}: \Delta J=1, M1(+E2) 326.6\gamma to (10^-); \Delta J=2, (E2) 723.7\gamma to (9^-); band assignment. 2190.3a 4 (10-) CD J^{\pi}: 787.0\gamma to (9^-); band assignment. 2546.4a 7 (11-) C J^{\pi}: 356\gamma and 745\gamma to (10^-); band assignment. 2595.9(a) 4 (12-) CDEF J^{\pi}: \Delta J=1, (M1) 468.3\gamma to (11^-); band assignment. 2610.1 9 (11-) C J^{\pi}: \Delta J=1, (M1) 468.3\gamma to (11^-); band assignment. 2610.1 9 (11-) C J^{\pi}: \Delta J=1, (M1) 468.3\gamma to (12^-); (E2) 936.9\gamma to (11^-); band assignment. 3064.3& 4 (13-) CDEF J^{\pi}: \Delta J=1, (M1) 468.3\gamma to (12^-); (E2) 936.9\gamma to (11^-); band assignment. 317.8a 7 (13-) CDEF J^{\pi}: \Delta J=1, (M1) 468.3\gamma to (12^-); band assignment. 3490.6a 7 (14-) CDEF J^{\pi}: \Delta J=1, (M1) 468.3\gamma to (12^-); band assignment. 3490.6a 7 (14-) CDEF J^{\pi}: \Delta J=1, (M1) 468.3\gamma to (12^-); band assignment. 3490.6a 7 (14-) CDEF J^{\pi}: \Delta J=1, (M1) 468.3\gamma to (12^-); band assignment. 3490.6a 6 (14-) $	1732.8 6	(9,10)		D	J^{π} : 535.2 D to (9 ⁺).
2127.5 ^{&} 4(11 ⁻)CDEF $J^{\pi}: \Delta J=1, M1(+E2) 326.6\gamma$ to (10 ⁻); $\Delta J=2, (E2) 723.7\gamma$ to (9 ⁻); band assignment.2190.3 ^a 4(10 ⁻)CD $J^{\pi}: 787.0\gamma$ to (9 ⁻); band assignment.2546.4 ^a 7(11 ⁻)C $J^{\pi}: 356\gamma$ and 745\gamma to (10 ⁻); band assignment.2595.9 ^a 4(12 ⁻)CDEF $J^{\pi}: \Delta J=1, (M1) 468.3\gamma$ to (11 ⁻); band assignment.2595.9 ^a 4(12 ⁻)CDEF $J^{\pi}: \Delta Q_{0}$ to (10 ⁻); 301 γ from (12 ⁻).2910.8 ^a 7(12 ⁻)C $J^{\pi}: 364\gamma$ to (11 ⁻) and 721 γ to (10 ⁻); band assignment.3064.3 ^{&} 4(13 ⁻)CDEF $J^{\pi}: \Delta J=1, (M1) 468.3\gamma$ to (12 ⁻); (E2) 936.9 γ to (11 ⁻); band assignment.317.8 ^a 7(13 ⁻)C $J^{\pi}: 367\gamma$ and 622 γ to (12 ⁻); band assignment.3490.6 ^a 7(14 ⁻)CDEF $J^{\pi}: \Delta J=1, (M1) 468.3\gamma$ to (12 ⁻); band assignment.3580.6 ^a 5(14 ⁻)CDEF $J^{\pi}: 307\gamma$ and 62 γ to (12 ⁻); band assignment.3490.6 ^a 7(14 ⁻)CDEF $J^{\pi}: 516.2\gamma$ to (13 ⁻) and 985 γ to (12 ⁻); band assignment.3480.6 ^a 6(16 ⁻)C $J^{\pi}: 564\gamma$ to (15 ⁻) and 985 γ to (12 ⁻); band assignment.3480.6 ^a 8(16 ⁻)C $J^{\pi}: 614\gamma$ to (15 ⁻) and 982 γ to (14 ⁻); band assignment.3948.8 ^{&} 7(15 ⁻)C $I^{\pi}: 1055\gamma$ to (15 ⁻) and 388 γ to (16 ⁻); band assignment.4389.9? 18(16)E $J^{\pi}: 1126\gamma$ to (14 ⁻) and 657 γ to (15 ⁻).5003.7 ^{&} 9(17 ⁻)C $J^{\pi}: 1076\gamma$ to (16 ⁻) and 353(17 ⁻); band assignment.638.8 ^a 10(18 ⁻	1800.9 [@] 4	(10^{-})		CDEF	J ^{π} : Δ J=1, M1 397.5 γ to (9 ⁻); band assignment.
2190.3 ^d 4(10 ⁻)CD J^{π} : 787.0y to (9 ⁻); band assignment.2546.4 ^{df} 7(11 ⁻)C J^{π} : 356y and 745y to (10 ⁻); band assignment.2595.9 ^{df} 4(12 ⁻)CDEF J^{π} : $\Delta J=1$, (M1) 468.3y to (11 ⁻); band assignment.2610.19(11 ⁻)C J^{π} : 364y to (11 ⁻); 301y from (12 ⁻).2910.8 ^{df} 7(12 ⁻)C J^{π} : 364y to (11 ⁻); and 721y to (10 ⁻); band assignment.3064.3 ^{dk} 4(13 ⁻)CDEF J^{π} : $\Delta J=1$, (M1) 468.3y to (12 ⁻); (E2) 936.9y to (11 ⁻); band assignment.317.8 ^{df} 7(13 ⁻)C J^{π} : 307y and 622y to (12 ⁻); band assignment.3217.8 ^{df} 7(13 ⁻)C J^{π} : 307y and 622y to (12 ⁻); band assignment.3490.6 ^{df} (14 ⁻)CDEF J^{π} : M1.E2 426y to (13 ⁻); 895y to (12 ⁻); band assignment.3490.6 ^{df} (14 ⁻)CDEF J^{π} : 516.2y to (13 ⁻); and 985y to (12 ⁻); band assignment.3490.6 ^{df} (16 ⁻)C J^{π} : 614y to (15 ⁻) and 985y to (12 ⁻); band assignment.3580.6 ^{df} 5(14 ⁻)CDXREF: D(?). J^{π} : 614y to (15 ⁻)and 731y to (13 ⁻); band assignment.3948.8 ^{kf} 7(15 ⁻)C J^{π} : 614y to (15 ⁻) and 985y to (12 ⁻); band assignment.4389.9? 18(16)E J^{π} : 141y to (15 ⁻).4563.0 ^{df} 8(16 ⁻)C J^{π} : 1265y to (15 ⁻) and 982y to (14 ⁻); band assignment.4563.0 ^{df} 8(16 ⁻)C J^{π} : 1055y to (15 ⁻) and 982y to (2127.5 ^{&} 4	(11^{-})		CDEF	J ^π : Δ J=1, M1(+E2) 326.6γ to (10 ⁻); Δ J=2, (E2) 723.7γ to (9 ⁻); band assignment.
2546.4 ⁴⁷ 7 (11 ⁻) C J ^z : 356y and 745y to (10 ⁻); band assignment. 2595.9 ⁶⁰ 4 (12 ⁻) CDEF J ^π : $\Delta J=1$, (M1) 468.3y to (11 ⁻); band assignment. 2610.1 9 (11 ⁻) C J ^π : 420y to (10 ⁻); 301y from (12 ⁻). 2910.8 ⁴⁷ 7 (12 ⁻) C J ^π : 364y to (11 ⁻) and 721y to (10 ⁻); band assignment. 3064.3 ^{& 4} (13 ⁻) CDEF J ^π : $\Delta J=1$, (M1) 468.3y to (12 ⁻); band assignment. 317.8 ⁴⁷ 7 (13 ⁻) C J ^π : 307y and 622y to (12 ⁻); band assignment. 3490.6 ⁴⁷ 7 (14 ⁻) CDEF J ^π : M1,E2 426y to (13 ⁻); band assignment. 3490.6 ⁴⁷ 7 (14 ⁻) CDEF J ^π : M1,E2 426y to (13 ⁻); 895y to (12 ⁻); band assignment. 3580.6 ⁶⁰ 5 (14 ⁻) CDEF J ^π : 368y to (14 ⁻) and 985y to (12 ⁻); band assignment. 3948.8 ^{& 7} (15 ⁻) C EF J ^π : 368y to (14 ⁻) and 985y to (12 ⁻); band assignment. 3948.8 ^{& 7} (15 ⁻) C EF J ^π : 368y to (14 ⁻) and 985y to (12 ⁻); band assignment. 4389.9? 18 (16) E J ^π : 441y to (15 ⁻). 4563.0 ⁶⁰ 8 (16 ⁻) C J ^π : 1126y to (14 ⁻) and 67y to (14 ⁻); band assignment. 4616.0 9 (16 ⁻) C J ^π : 1126y to (15 ⁻) and 388y to (16 ⁻); band assignment. 5638.8 ⁶⁰ 10 (18 ⁻) C J ^π : 1076y to (16 ⁻) and 635(17 ⁻); band assignment. 6174.8 ^{& 11} (19 ⁻) C J ^π : 1171y to (17 ⁻) and 848y to (18 ⁻). 6831.7 ⁶⁰ 12 (20 ⁻) C J ^π : 1193y to (18 ⁻) and 657y to (19 ⁻); band assignment. 7414.9 ^{& 13} (21 ⁻) C J ^π : 11240y to (19 ⁻) and 538y to (20 ⁻); band assignment. 8041.4 ⁽⁴⁰⁾ 13 (22 ⁻) C J ^π : 120y to (20 ⁻) and 626y to (21 ⁻); band assignment.	2190.3 ^{<i>a</i>} 4	(10 ⁻)		CD	J^{π} : 787.0 γ to (9 ⁻); band assignment.
2595.9 th 4 (12 ⁻) CDEF $J^{\pi}: \Delta J=1, (M1) 468.3\gamma$ to $(11^{-});$ band assignment. 2610.1 9 (11 ⁻) C $J^{\pi}: 420\gamma$ to $(10^{-}); 301\gamma$ from $(12^{-}).$ 2910.8 ^d 7 (12 ⁻) C $J^{\pi}: 364\gamma$ to $(11^{-}); and 721\gamma$ to $(10^{-}); band assignment.$ 3064.3 ^k 4 (13 ⁻) CDEF $J^{\pi}: \Delta J=1, (M1) 468.3\gamma$ to $(12^{-}); (E2) 936.9\gamma$ to $(11^{-}); band assignment.$ 3217.8 ^d 7 (13 ⁻) C $J^{\pi}: 307\gamma$ and 622γ to $(12^{-}); band assignment.$ 3490.6 ^d 7 (14 ⁻) CDEF $J^{\pi}: M1, E2 426\gamma$ to $(12^{-}); band assignment.$ 3580.6 ^{db} 5 (14 ⁻) CDEF $J^{\pi}: 516.2\gamma$ to $(12^{-}); band assignment.$ 3948.8 ^k 7 (15 ⁻) C EF $J^{\pi}: 368\gamma$ to (14^{-}) and 985γ to $(12^{-}); band assignment.$ 3948.8 ^k 7 (15 ⁻) C EF $J^{\pi}: 368\gamma$ to (14^{-}) and 731γ to $(13^{-}); band assignment.$ 4389.9? 18 (16) E $J^{\pi}: 441\gamma$ to $(15^{-}).$ E 503.0 ^{db} 8 (16 ⁻) C $J^{\pi}: 1056\gamma$ to (14^{-}) and 982γ to $(14^{-}); band assignment.$ 4563.0 ^{db} 8 (16 ⁻) C $J^{\pi}: 1056\gamma$ to (15^{-}) and 388γ to $(16^{-}); band assignment.$ 5003.7 ^{kb} 9 (1	2546.4 ^{<i>a</i>} 7	(11^{-})		C	J^{π} : 356 γ and 745 γ to (10 ⁻); band assignment.
2610.1 9 (11) C J^* : 420y to (10); 301y from (12). 2910.8 ^d 7 (12 ⁻) C J^* : 364y to (11 ⁻) and 721y to (10 ⁻); band assignment. 3064.3 ^{&} 4 (13 ⁻) CDEF J^* : $\Delta J=1$, (M1) 468.3y to (12 ⁻); (E2) 936.9y to (11 ⁻); band assignment. 3217.8 ^d 7 (13 ⁻) C J^* : $307y$ and 622y to (12 ⁻); band assignment. 3490.6 ^d 7 (14 ⁻) CDEF J^* : $307y$ and 622y to (12 ⁻); band assignment. 3580.6 [@] 5 (14 ⁻) CDEF J^* : $306y$ to (13 ⁻) and 985y to (12 ⁻); band assignment. 3948.8 ^{&} 7 (15 ⁻) C EF J^* : $368y$ to (14 ⁻) and 731y to (13 ⁻); band assignment. 4389.9? 18 (16) E J^* : $614y$ to (15 ⁻) and 982y to (14 ⁻); band assignment. 4563.0 [@] 8 (16 ⁻) C J^* : $614y$ to (15 ⁻) and 982y to (14 ⁻); band assignment. 4616.0 9 (16 ⁻) C J^* : $1055y$ to (15 ⁻) and $388y$ to (16 ⁻); band assignment. 5033.7 ^{&} 9 (17 ⁻) C J^* : $1076y$ to (16 ⁻) and $635(17-);$ band assignment. 6174.8 ^{&} 11 (19 ⁻) C J^* : $1171y$ to (17 ⁻) and 536y to (18 ⁻); band assignment. 6486.7 11 (19 ⁻) C	2595.9 ^w 4	(12^{-})		CDEF	J^{π} : $\Delta J=1$, (M1) 468.3 γ to (11 ⁻); band assignment.
2910.8 7 (12) C J : 504y to (11) and 721y to (10); band assignment. 3064.3 ^{&} 4 (13 ⁻) CDEF J ^π : $\Delta J=1$, (M1) 468.3y to (12 ⁻); (E2) 936.9y to (11 ⁻); band assignment. 3217.8 ^d 7 (13 ⁻) C J ^π : $\Delta J=1$, (M1) 468.3y to (12 ⁻); band assignment. 3490.6 ^d 7 (14 ⁻) CDEF J ^π : $\Delta T=1$, (M1) 468.3y to (12 ⁻); band assignment. 3490.6 ^d 7 (14 ⁻) CDEF J ^π : $\Delta T=1$, (M1) 468.3y to (12 ⁻); band assignment. 3580.6 ^{de} 5 (14 ⁻) CDEF J ^π : M1,E2 426y to (13 ⁻); band assignment. 3580.6 ^{de} 5 (14 ⁻) CDEF J ^π : M1,E2 426y to (13 ⁻); band assignment. 3948.8 ^{&} 7 (15 ⁻) C EF J ^π : 368y to (14 ⁻) and 985y to (12 ⁻); band assignment. 4389.9? 18 (16) E J ^π : 368y to (14 ⁻) and 731y to (13 ⁻); band assignment. 4563.0 ^{de} 8 (16 ⁻) C J ^π : 1126y to (14 ⁻) and 667y to (15 ⁻). 5003.7 ^{&} 9 (17 ⁻) C J ^π : 1055y to (15 ⁻) and 388y to (16 ⁻); band assignment. 5638.8 ^{de} 10 (18 ⁻) C J ^π : 1076y to (16 ⁻) and 535(17 ⁻); band assignment. 6174.8 ^{&} 11 (19 ⁻) C J ^π : 1171y to (17	2610.19	(11)		C	J^* : 420 γ to (10); 301 γ from (12).
3064.5^{-4} (13)CDEF $J^{+}: \Delta J^{-1}, (M1) 408.5y to (12); (E2) 956.9y to (11); band assignment.3217.8^{d}(13^{-})CJ^{\pi}: 307y and 622y to (12^{-}); band assignment.3490.6^{d}(14^{-})CDEFJ^{\pi}: M1, E2 426y to (13^{-}); 895y to (12^{-}); band assignment.3580.6^{@}5(14^{-})CDXREF: D(?).J^{\pi}: 516.2y to (13^{-}) and 985y to (12^{-}); band assignment.3948.8^{\&}7(15^{-})CF^{\pi}: 368y to (14^{-}) and 731y to (13^{-}); band assignment.4389.9?18(16)EJ^{\pi}: 441y to (15^{-}).C4563.0^{@}8(16^{-})CJ^{\pi}: 614y to (15^{-}) and 982y to (14^{-}); band assignment.4616.0.9(16^{-})CJ^{\pi}: 1126y to (14^{-}) and 667y to (15^{-}).5003.7^{\&}9(17^{-})5038.8^{@}10(18^{-})CJ^{\pi}: 1076y to (16^{-}) and 635(17^{-}); band assignment.6174.8^{\&}11(19^{-})CJ^{\pi}: 1171y to (17^{-}) and 536y to (18^{-}).6831.7^{@}12(20^{-})CJ^{\pi}: 1193y to (18^{-}) and 657y to (19^{-}); band assignment.7414.9^{\&}13(21^{-})CJ^{\pi}: 1240y to (19^{-}) and 583y to (20^{-}); band assignment.8041.4^{@}13(22^{-})$	2910.8 7	(12)		CDEE	J : 504γ to (11) and 721γ to (10); band assignment.
3217.5 (15^{-7}) <	$3004.3^{-2} 4$ $3217.8^{-2} 7$	(13) (13^{-})		CDEF	J^{π} : $\Delta J = 1$, (M1) 408.57 to (12); (E2) 950.97 to (11); band assignment. I^{π} : 307 α and 622 α to (12 ⁻); band assignment
3580.6 (0 5 (14 ⁻)CDXREF: D(?). J ^{π} : 516.2 γ to (13 ⁻) and 985 γ to (12 ⁻); band assignment.3948.8 (0 7 (15 ⁻)C EFJ ^{π} : 368 γ to (14 ⁻) and 731 γ to (13 ⁻); band assignment.4389.9? 18 (16)EJ ^{π} : 368 γ to (14 ⁻) and 731 γ to (13 ⁻); band assignment.4563.0 (0 8 (16 ⁻)CJ ^{π} : 614 γ to (15 ⁻) and 982 γ to (14 ⁻); band assignment.4563.0 (0 8 (16 ⁻)CJ ^{π} : 1126 γ to (15 ⁻) and 982 γ to (14 ⁻); band assignment.4563.0 (0 8 (16 ⁻)CJ ^{π} : 1126 γ to (15 ⁻) and 982 γ to (14 ⁻); band assignment.4563.0 (0 8 (16 ⁻)CJ ^{π} : 1126 γ to (15 ⁻) and 982 γ to (15 ⁻).5003.7 (0 9 (17 ⁻)CJ ^{π} : 1055 γ to (15 ⁻) and 388 γ to (16 ⁻); band assignment.5638.8 (10)(18 ⁻)CJ ^{π} : 1076 γ to (16 ⁻) and 635(17 ⁻); band assignment.6174.8 (11)(19 ⁻)CJ ^{π} : 1171 γ to (17 ⁻) and 536 γ to (18 ⁻); band assignment.6486.7 11(19 ⁻)CJ ^{π} : 1193 γ to (18 ⁻) and 657 γ to (19 ⁻); band assignment.6831.7 (0 12 (20 ⁻)CJ ^{π} : 1240 γ to (19 ⁻) and 583 γ to (20 ⁻); band assignment.7414.9 (0 13 (21 ⁻)CJ ^{π} : 1240 γ to (20 ⁻) and 626 γ to (21 ⁻); band assignment.8041.4 (0 13 (22 ⁻)CJ ^{π} : 1210 γ to (20 ⁻) and 626 γ to (21 ⁻); band assignment.	3490.6^{a} 7	(13^{-})		CDEF	J^{π} : M1 E2 426v to (13 ⁻): 895v to (12 ⁻): hand assignment.
$J^{\pi_{1}}: 16(\gamma)$ $J^{\pi_{1}}: 16(\gamma)$ $J^{\pi_{1}}: 516.2\gamma \text{ to } (12^{-}); \text{ band assignment.}$ $J^{\pi_{1}}: 368\gamma \text{ to } (14^{-}) \text{ and } 731\gamma \text{ to } (13^{-}); \text{ band assignment.}$ $4389.9? 18 (16)$ $E J^{\pi_{1}}: 441\gamma \text{ to } (15^{-}).$ $4563.0^{@} 8 (16^{-})$ $C J^{\pi_{1}}: 614\gamma \text{ to } (15^{-}) \text{ and } 982\gamma \text{ to } (14^{-}); \text{ band assignment.}$ $4616.0 9 (16^{-})$ $C J^{\pi_{1}}: 1126\gamma \text{ to } (15^{-}) \text{ and } 667\gamma \text{ to } (15^{-}).$ $5003.7^{\&} 9 (17^{-})$ $C J^{\pi_{1}}: 1055\gamma \text{ to } (15^{-}) \text{ and } 388\gamma \text{ to } (16^{-}); \text{ band assignment.}$ $5638.8^{@} 10 (18^{-})$ $C J^{\pi_{1}}: 1076\gamma \text{ to } (16^{-}) \text{ and } 635(17^{-}); \text{ band assignment.}$ $6174.8^{\&} 11 (19^{-})$ $C J^{\pi_{1}}: 1171\gamma \text{ to } (17^{-}) \text{ and } 536\gamma \text{ to } (18^{-}); \text{ band assignment.}$ $6486.7 11 (19^{-})$ $C J^{\pi_{1}}: 1483\gamma \text{ to } (18^{-}) \text{ and } 657\gamma \text{ to } (19^{-}); \text{ band assignment.}$ $7414.9^{\&} 13 (21^{-})$ $C J^{\pi_{1}}: 1240\gamma \text{ to } (19^{-}) \text{ and } 383\gamma \text{ to } (20^{-}); \text{ band assignment.}$ $8041.4^{@} 13 (22^{-})$ $C J^{\pi_{1}}: 1210\gamma \text{ to } (20^{-}) \text{ and } 625\gamma \text{ to } (21^{-}); \text{ band assignment.}$	$3580.6^{@}5$	(14^{-})		CD	XREF D(?)
3948.8 $\&$ 7(15 ⁻)CEF J^{π} : 368y to (14 ⁻) and 731y to (13 ⁻); band assignment.4389.9? 18(16)E J^{π} : 441y to (15 ⁻).4563.0 $@$ 8(16 ⁻)C J^{π} : 614y to (15 ⁻) and 982y to (14 ⁻); band assignment.4616.0 9(16 ⁻)C J^{π} : 1126y to (14 ⁻) and 667y to (15 ⁻).5003.7 $\&$ 9(17 ⁻)C J^{π} : 1055y to (15 ⁻) and 388y to (16 ⁻); band assignment.5638.8 $@$ 10(18 ⁻)C J^{π} : 1076y to (16 ⁻) and 635(17 ⁻); band assignment.6174.8 $\&$ 11(19 ⁻)C J^{π} : 1171y to (17 ⁻) and 536y to (18 ⁻); band assignment.6486.7 11(19 ⁻)C J^{π} : 1193y to (18 ⁻) and 657y to (19 ⁻); band assignment.7414.9 $\&$ 13(21 ⁻)C J^{π} : 1240y to (19 ⁻) and 583y to (20 ⁻); band assignment.8041.4 $@$ 13(22 ⁻)C J^{π} : 1210y to (20 ⁻) and 626y to (21 ⁻); band assignment.	220010 2	(1.)			J^{π} : 516.2 γ to (13 ⁻) and 985 γ to (12 ⁻); band assignment.
4389.9? $I8$ (16)E J^{π} : 441 γ to (15 ⁻).4563.0 $@$ 8 (16 ⁻)C J^{π} : 614 γ to (15 ⁻) and 982 γ to (14 ⁻); band assignment.4616.0 9 (16 ⁻)C J^{π} : 1126 γ to (14 ⁻) and 667 γ to (15 ⁻).5003.7 $&$ 9 (17 ⁻)C J^{π} : 1055 γ to (15 ⁻) and 388 γ to (16 ⁻); band assignment.5638.8 $I0$ (18 ⁻)C J^{π} : 1076 γ to (16 ⁻) and 635(17 ⁻); band assignment.6174.8 $I1$ (19 ⁻)C J^{π} : 1171 γ to (17 ⁻) and 536 γ to (18 ⁻); band assignment.6486.7 $I1$ (19 ⁻)C J^{π} : 1193 γ to (18 ⁻) and 657 γ to (19 ⁻); band assignment.6831.7 $I2$ (20 ⁻)C J^{π} : 1240 γ to (19 ⁻) and 583 γ to (20 ⁻); band assignment.7414.9 $I3$ (21 ⁻)C J^{π} : 1210 γ to (20 ⁻) and 626 γ to (21 ⁻); band assignment.8041.4 $@$ $I3$ (22 ⁻)C J^{π} : 1210 γ to (20 ⁻) and 626 γ to (21 ⁻); band assignment.	3948.8 <mark>&</mark> 7	(15^{-})		C EF	J^{π} : 368 γ to (14 ⁻) and 731 γ to (13 ⁻); band assignment.
4563.0 (16^-) C J^{π} : 614γ to (15^-) and 982γ to (14^-) ; band assignment.4616.0 9 (16^-) C J^{π} : 1126γ to (14^-) and 667γ to (15^-) .5003.7 9 (17^-) C J^{π} : 1055γ to (15^-) and 388γ to (16^-) ; band assignment.5638.8 10 (18^-) C J^{π} : 1076γ to (16^-) and $635(17^-)$; band assignment. $6174.8^{\&}$ 11 (19^-) C J^{π} : 1171γ to (17^-) and 536γ to (18^-) ; band assignment. 6486.7 11 (19^-) C J^{π} : 1483γ to (17^-) and 848γ to (18^-) . $6831.7^{@}$ 12 (20^-) C J^{π} : 1193γ to (18^-) and 657γ to (19^-) ; band assignment. $7414.9^{\&}$ 13 (21^-) C J^{π} : 1240γ to (19^-) and 583γ to (20^-) ; band assignment. $8041.4^{@}$ 13 (22^-) C J^{π} : 1210γ to (20^-) and 626γ to (21^-) ; band assignment.	4389.9? 18	(16)		Е	J^{π} : 441 γ to (15 ⁻).
4616.0 9 (16^-) C J^{π} : 1126y to (14^-) and 667y to (15^-) .5003.7 $\overset{\&}{}$ 9 (17^-) C J^{π} : 1055y to (15^-) and 388y to (16^-) ; band assignment.5638.8 $\overset{@}{}$ 10 (18^-) C J^{π} : 1076y to (16^-) and 635(17 $^-$); band assignment.6174.8 $\overset{\&}{}$ 11 (19^-) C J^{π} : 1171y to (17^-) and 536y to (18^-) ; band assignment.6486.7 11 (19^-) C J^{π} : 1483y to (17^-) and 848y to (18^-) .6831.7 $\overset{@}{}$ 12 (20^-) C J^{π} : 1193y to (18^-) and 657y to (19^-) ; band assignment.7414.9 $\overset{\&}{}$ 13 (21^-) C J^{π} : 1240y to (19^-) and 583y to (20^-) ; band assignment.8041.4 $\overset{@}{}$ 13 (22^-) C J^{π} : 1210y to (20^-) and 626y to (21^-) ; band assignment.	4563.0 [@] 8	(16 ⁻)		С	J ^{π} : 614 γ to (15 ⁻) and 982 γ to (14 ⁻); band assignment.
5003.7 $^{\&}$ 9(17 ⁻)C J^{π} : 1055 γ to (15 ⁻) and 388 γ to (16 ⁻); band assignment.5638.8 $^{@}$ 10(18 ⁻)C J^{π} : 1076 γ to (16 ⁻) and 635(17 ⁻); band assignment.6174.8 $^{\&}$ 11(19 ⁻)C J^{π} : 1171 γ to (17 ⁻) and 536 γ to (18 ⁻); band assignment.6486.7 11(19 ⁻)C J^{π} : 1483 γ to (17 ⁻) and 848 γ to (18 ⁻).6831.7 $^{@}$ 12(20 ⁻)C J^{π} : 1193 γ to (18 ⁻) and 657 γ to (19 ⁻); band assignment.7414.9 $^{\&}$ 13(21 ⁻)C J^{π} : 1240 γ to (19 ⁻) and 583 γ to (20 ⁻); band assignment.8041.4 $^{@}$ 13(22 ⁻)C J^{π} : 1210 γ to (20 ⁻) and 626 γ to (21 ⁻); band assignment.	4616.0 9	(16 ⁻)		С	J^{π} : 1126 γ to (14 ⁻) and 667 γ to (15 ⁻).
$5638.8^{(0)}$ 10 (18^-) C J^{π} : 1076y to (16 ⁻) and 635(17 ⁻); band assignment. $6174.8^{(0)}$ 11 (19^-) C J^{π} : 1171y to (17 ⁻) and 536y to (18 ⁻); band assignment. 6486.7 11 (19^-) C J^{π} : 1483y to (17 ⁻) and 848y to (18 ⁻). $6831.7^{(0)}$ 12 (20^-) C J^{π} : 1193y to (18 ⁻) and 657y to (19 ⁻); band assignment. $7414.9^{(0)}$ 13 (21^-) C J^{π} : 1240y to (19 ⁻) and 583y to (20 ⁻); band assignment. $8041.4^{(0)}$ 13 (22^-) C J^{π} : 1210y to (20 ⁻) and 626y to (21 ⁻); band assignment.	5003.7 ^{&} 9	(17 ⁻)		С	J^{π} : 1055 γ to (15 ⁻) and 388 γ to (16 ⁻); band assignment.
$6174.8^{\&}$ 11 (19^-) C J^{π} : 1171 γ to (17^-) and 536 γ to (18^-) ; band assignment. 6486.7 11 (19^-) C J^{π} : 1483 γ to (17^-) and 848 γ to (18^-) . $6831.7^{@}$ 12 (20^-) C J^{π} : 1193 γ to (18^-) and 657 γ to (19^-) ; band assignment. $7414.9^{\&}$ 13 (21^-) C J^{π} : 1240 γ to (19^-) and 583 γ to (20^-) ; band assignment. $8041.4^{@}$ 13 (22^-) C J^{π} : 1210 γ to (20^-) and 626 γ to (21^-) ; band assignment.	5638.8 [@] 10	(18^{-})		С	J^{π} : 1076 γ to (16 ⁻) and 635(17 ⁻); band assignment.
$6486.7 \ 11$ (19^-) C J^{π} : 1483 γ to (17^-) and 848 γ to (18^-) . $6831.7^{@} \ 12$ (20^-) C J^{π} : 1193 γ to (18^-) and 657 γ to (19^-) ; band assignment. $7414.9^{\&} \ 13$ (21^-) C J^{π} : 1240 γ to (19^-) and 583 γ to (20^-) ; band assignment. $8041.4^{@} \ 13$ (22^-) C J^{π} : 1210 γ to (20^-) and 626 γ to (21^-) ; band assignment.	6174.8 ^{&} 11	(19 ⁻)		С	J ^{π} : 1171 γ to (17 ⁻) and 536 γ to (18 ⁻); band assignment.
6831.7 ^(III) Image: Constraint of the system of the	6486.7 11	(19 ⁻)		C	J^{π} : 1483 γ to (17 ⁻) and 848 γ to (18 ⁻).
7414.9 ^{&} 13 (21 ⁻) C J^{π} : 1240y to (19 ⁻) and 583y to (20 ⁻); band assignment. 8041.4 [@] 13 (22 ⁻) C J^{π} : 1210y to (20 ⁻) and 626y to (21 ⁻); band assignment.	6831.7 ^{^w} 12	(20^{-})		С	J ^{π} : 1193 γ to (18 ⁻) and 657 γ to (19 ⁻); band assignment.
8041.4 ^(III) I_{3} (22 ⁻) C J ^{π} : 1210 γ to (20 ⁻) and 626 γ to (21 ⁻); band assignment.	7414.9 ^{x} 13	(21^{-})		С	J^{π} : 1240 γ to (19 ⁻) and 583 γ to (20 ⁻); band assignment.
	8041.4 ^{⁽⁰⁾} 13	(22 ⁻)		С	J^{π} : 1210 γ to (20 ⁻) and 626 γ to (21 ⁻); band assignment.
9001.7 ^{<i>b</i>} 14 (23 ⁻) C J ^{π} : 1587 γ to (21 ⁻) and 960 γ to (22 ⁻); possible bandhead.	9001.7 ^b 14	(23-)		С	J^{π} : 1587 γ to (21 ⁻) and 960 γ to (22 ⁻); possible bandhead.
9103.1 14 (23 ⁻) C J^{π} : 1688 γ to (21 ⁻) and 1062 γ to (22 ⁻).	9103.1 14	(23^{-})		C	J^{n} : 1688 γ to (21 ⁻) and 1062 γ to (22 ⁻).
9303.4 U^{π} (24 ⁻) C J ^{π} : 1262 γ to (22 ⁻); band assignment.	9303.4 ^w 17	(24 ⁻)		C	J^{π} : 1262 γ to (22 ⁻); band assignment.
9602.9 ^{<i>b</i>} 15 C J^{π} : 500 γ and 601 γ to (23 ⁻).	9602.9 ⁰ 15			С	J^{π} : 500 γ and 601 γ to (23 ⁻).
10403.9 ^{<i>p</i>} 18 C	10403.9 ⁰ 18			C	
$108/4.4 \ 20$ C J [*] : $15/1\gamma$ to (24).	108/4.4 20			C	J^{*} : 15/1 γ to (24).
$\frac{11003.710}{11400.000}$	11003.9 10			C	
11400.9° 21 C	11400.9° 21 12607 4 22			C	
1207.4 22 C	12027.4 22 12022 9 <mark>b</mark> 23			C	
14518 9b 25	12522.9 25 14518 0 ^b 25			c	

[†] From least-squares fit to $E\gamma$ values, assuming 1 keV uncertainty when not stated.

[‡] For high spin states (J>5), it is assumed that spin values generally increase with the excitation energy. This assumption is supported by the decay mode of the levels. The assignments are mainly based on $\gamma(\theta)$, $\gamma(\ln \text{ pol})$ and ce data.

* From γ (t) (1983Bi04) in (p, $\eta\gamma$), unless otherwise noted. (a) Band(A): $\pi g_{9/2}^{-5} \otimes v h_{11/2}, \alpha=0$. Signature inversion analyzed by 2002Ti02. & Band(a): $\pi g_{9/2}^{-5} \otimes v h_{11/2}, \alpha=1$. Signature inversion analyzed by 2002Ti02.

¹⁰⁰Rh Levels (continued)

^{*a*} Band(B): Band based on (10⁻). Probable configuration= $\pi(g_{9/2}^{-4}p_{1/2}^{-1})\otimes\nu(d_{5/2}g_{7/2})^5$. 2005Jo20 interpret this band as possible 'chiral' partner of $\pi g_{9/2}^{-5} \otimes \nu h_{11/2}$ band. See also 2006Me06. ^{*b*} Band(C): Band based on (23⁻).

	Adopted Levels, Gammas (continued)											
							<u> </u>	~(¹⁰⁰ Rh)				
E _i (level)	\mathbf{J}_i^{π}	E_{γ}	I_{γ}	E_f	\mathbf{J}_f^{π}	Mult. [#]	$\delta^{\#}$	α [@]	Comments			
32.686	(2)-	32.68 2	100	0.0	1-	M1+E2	0.15 3	10.1 7	B(M1)(W.u.)=0.00201 +21-18; B(E2)(W.u.)=40 +22-16 α (K)=7.97 22; α (L)=1.8 4; α (M)=0.34 7 α (N)=0.052 11; α (O)=0.00146 3 E _{γ} : weighted average of 32.66 2 from ¹⁰⁰ Pd ε decay (3.63 d) and 32.70 2 from (p.p γ). Others: 32.7 2 from ¹⁰⁰ Rh IT decay (4.6 min)			
74.782	(2)+	42.09 2	13.8 9	32.686	(2)-	[E1]		1.694	and $({}^{6}\text{Li},4n\gamma)$. B(E1)(W.u.)=1.59×10 ⁻⁶ 9 $\alpha(\text{K})$ =1.462 21; $\alpha(\text{L})$ =0.190 3; $\alpha(\text{M})$ =0.0350 5 $\alpha(\text{N})$ =0.00556 8; $\alpha(\text{O})$ =0.000207 3 E _{γ} : weighted average of 42.08 2 from ¹⁰⁰ Pd ε decay (3.63 d) and 42.10 2 from (p,n γ). Others: 42.1 2 from ¹⁰⁰ Rh IT decay (4.6 min) and 42.1 2 from (${}^{6}\text{Li},4n\gamma$). I _{γ} : weighted average of 14.7 9 from ¹⁰⁰ Pd ε decay (3.63 d) and 13.0 & from (p,n γ). Other: 9.1 from (${}^{6}\text{Li},4n\gamma$) 13.8 from ¹⁰⁰ Rh IT			
		74.78 2	100 2	0.0	1-	E1		0.336	b from (p,hy). Other: 9.1 from (El,4ny), 15.6 from - Kn 11 decay. B(E1)(W.u.)=2.05×10 ⁻⁶ 4 $\alpha(K)=0.293$ 5; $\alpha(L)=0.0357$ 5; $\alpha(M)=0.00657$ 10 $\alpha(N)=0.001061$ 15; $\alpha(O)=4.48\times10^{-5}$ 7 E _y : from ¹⁰⁰ Pd ε decay (3.63 d) and (p,ny). Others: 74.9 2 from			
86.325	(1,2)	53.66 2	65.9 16	32.686	(2)-	[D]		1.4 6	$({}^{0}L_{1},4n\gamma)$ and ${}^{100}Rh$ I1 decay. I_{γ} : from (p,n γ). Other: 100 6 from ${}^{100}Pd \varepsilon$ decay. $\alpha(K)=1.3$ 6; $\alpha(L)=0.16$ 7; $\alpha(M)=0.029$ 12; $\alpha(N)=0.0047$ 20; $\alpha(O)=0.00022$ 12			
		86.33 2	100 3	0.0	1-	[D]		0.37 15	E _γ ,I _γ : from (p,ηγ). Other: Eγ=53.52 <i>15</i> from ¹⁰⁰ Pd ε decay, Iγ=159 <i>40</i> in ¹⁰⁰ Pd ε decay is discrepant. However, 86.3 level is very weakly populated in ε decay. α (K)=0.32 <i>13</i> ; α (L)=0.039 <i>16</i> ; α (M)=0.007 <i>3</i> ; α (N)=0.0012 <i>5</i> ; α (O)=6.E–5 <i>3</i> E _γ ,I _γ : from (p,ηγ). Other: Eγ=86.37 <i>15</i> and Iγ=100 <i>40</i> from ¹⁰⁰ Pd ε			
107.59	(5+)	32.7 ^b 2	0.11	74.782	(2)+	[M3]	5.76	×10 ³ 20	decay. B(M3)(W.u.)=0.24 $\alpha(K)=2.07\times10^3 5$; $\alpha(L)=2.96\times10^3 12$; $\alpha(M)=631 25$			
		74.9 2	100	32.686	(2)-	[E3]		51.6 10	$\alpha(N)=98 \ 4; \ \alpha(O)=2.03 \ 8$ $E_{\gamma},I_{\gamma}: \text{ from } {}^{100}\text{Rh IT decay.}$ B(E3)(W.u.)=0.0095 $\alpha(K)=21.1 \ 4; \ \alpha(L)=24.8 \ 6; \ \alpha(M)=4.94 \ 11$ $\alpha(N)=0.730 \ 16; \ \alpha(O)=0.00252 \ 5$			
136.332	(1)	61.55 2	100	74.782	(2)+	[D]		1.0 4	E _γ ,I _γ : from ¹⁰⁰ Rh IT decay. $\alpha(K)=0.8 \ 4; \ \alpha(L)=0.10 \ 5; \ \alpha(M)=0.019 \ 8; \ \alpha(N)=0.0032 \ 14; \ \alpha(O)=0.00015 \ 8$ E _γ : weighted average of 61.60 5 from ¹⁰⁰ Pd ε decay (3.63 d) and 61.54 2 from (p,nγ).			

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From ENSDF

 $^{100}_{45}\text{Rh}_{55}$ -5

						Ad	opted Leve	els, Gamr	nas (continued)						
				γ ⁽¹⁰⁰ Rh) (continued)											
E _i (level)	\mathbf{J}_i^{π}	Eγ	I_{γ}	E_f	\mathbf{J}_{f}^{π}	Mult. [#]	α [@]	$I_{(\gamma+ce)}$	Comments						
139.85	(0,1)	139.85 3	100	0.0	1-	[D]	0.10 4	_	$\alpha(K)=0.08\ 4;\ \alpha(L)=0.010\ 5;\ \alpha(M)=0.0019\ 8;\ \alpha(N)=0.00031\ 14;$ $\alpha(O)=1.5\times10^{-5}\ 7$ $E_{\gamma}:$ weighted average of 139.92 5 from ¹⁰⁰ Pd ε decay (3.63 d) and						
151.806	$(1)^{+}$	(15.5)		136.332	(1)			80 <i>3</i>	139.84 2 from (p,n γ). E_{γ} : γ required by $\gamma\gamma$ data in (p,n γ). $I_{(\gamma+ce)}$: estimated (evaluators) from branching ratio in (p,n γ) (1983Bi04).						
		65.5 [†] <i>b</i>	<6 [†]	86.325	(1,2)	[D]	0.8 4		$\alpha(K)=0.7 \ 3; \ \alpha(L)=0.09 \ 4; \ \alpha(M)=0.016 \ 7; \ \alpha(N)=0.0027 \ 11; \ \alpha(O)=0.00013 \ 7$						
		119.19 8	21 8	32.686	(2)-	[E1]	0.0881		B(E1)(W.u.)=1.9×10 ⁻⁵ +13-9 α (K)=0.0770 11; α (L)=0.00913 13; α (M)=0.001684 24 α (N)=0.000275 4; α (O)=1.240×10 ⁻⁵ 18 E _{γ} : weighted average of 119.18 8 from ¹⁰⁰ Pd ε decay (3.63 d) and 119.2 1 from (p,n γ).						
		151.80 2	100 8	0.0	1-	E1	0.0440		I _γ : from ¹⁰⁰ Pd ε decay. Other: <43 from (p,nγ). B(E1)(W.u.)=4.4×10 ⁻⁵ +14-10 α (K)=0.0385 6; α (L)=0.00452 7; α (M)=0.000835 12 α (N)=0.0001366 20; α (O)=6.33×10 ⁻⁶ 9 E _γ : weighted average of 151.88 5 from ¹⁰⁰ Pd ε decay (3.63 d) and 151.79 2 from (p,nγ).						
154.00	(0,1)	154.00 10	100	0.0	1-	[D,E2]	0.17 12		I_{γ} : from ¹⁰⁰ Pd ε decay. E_{γ} : from ¹⁰⁰ Pd ε decay.						
158.804	1+	72.52 10	0.15 4	86.325	(1,2)	[D]	0.61 25		$\alpha(K)=0.53\ 22;\ \alpha(L)=0.07\ 3;\ \alpha(M)=0.012\ 5;\ \alpha(N)=0.0020\ 9;$ $\alpha(O)=9.E-5\ 5$						
		84.01 2	100 3	74.782	(2)+	M1	0.561		E_{γ}, I_{γ} : from ¹⁰⁰ Pd ε decay. B(M1)(W.u.)>0.059 α (K)=0.488 7; α (L)=0.0598 9; α (M)=0.01113 16 α (N)=0.00184 3; α (O)=9.15×10 ⁻⁵ 13 E_{α} : weighted average of 84.00 2 from ¹⁰⁰ Pd ε decay (3.63 d) and						
		126.10 <i>5</i>	15.5 7	32.686	(2)-	E1	0.0749		84.02 2 from (p,nγ). I _γ : from (p,nγ). Other: 100 6 from ¹⁰⁰ Pd ε decay. B(E1)(W.u.)>3.7×10 ⁻⁵ α (K)=0.0655 <i>10</i> ; α (L)=0.00775 <i>11</i> ; α (M)=0.001430 20 α (N)=0.00233 4; α (O)=1.060×10 ⁻⁵ <i>15</i> E _γ : unweighted average of 126.15 2 from ¹⁰⁰ Pd ε decay (3.63 d) and						
		158.87 <i>5</i>	3.2 2	0.0	1-	[E1]	0.0386		126.05 3 from (p,n γ). I _{γ} : weighted average of 15.0 <i>10</i> from ¹⁰⁰ Pd ε decay (3.63 d) and 15.8 7 from (p,n γ). B(E1)(W.u.)>3.7×10 ⁻⁶ α (K)=0.0338 5; α (L)=0.00397 6; α (M)=0.000732 <i>11</i> α (N)=0.0001199 <i>17</i> ; α (O)=5.58×10 ⁻⁶ 8 E _{γ} ,I _{γ} : from ¹⁰⁰ Pd ε decay. Other: I γ <3.7 from (p,n γ).						

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100 45
Rh
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171.094	(0 ⁻ to 4 ⁻)	84.79 [†] 2	100 [†] 3	86.325	(1,2)				
219.58	(7+)	138.36† <i>3</i> 112.0 <i>I</i>	47† <i>3</i> 100	32.686 107.59	(2) ⁻ (5 ⁺)	E2		0.898	B(E2)(W.u.)=4.65 22 α (K)=0.716 11; α (L)=0.1492 22; α (M)=0.0283 5 α (N)=0.00439 7; α (O)=0.0001065 16 E _γ : from (⁷ Li,3nγ). Other: 111.9 2 from (⁶ Li,4nγ). Mult.: Q from $\gamma(\theta)$ in (⁷ Li,3nγ) and M2 ruled out by RUL.
221.79? 243.47	(0 to 3) (6 ⁺)	85.46 [†] 5 135.9 <i>1</i>	100 100	136.332 107.59	(1) (5 ⁺)	M1+E2	+0.38 8	0.185 <i>15</i>	α(K)=0.158 12; α(L)=0.022 3; α(M)=0.0041 5 α(N)=0.00067 8; α(O)=2.79×10-5 17 Eγ: weighted average of 136.0 I from (7Li,3nγ) and 135.7 2 from (6Li,4nγ). Mult.,δ: from γ(θ) in (7Li,3nγ) and RUL. For δ=0.38, E1+M2 is ruled out by RUL since 136γ appears strongly in prompt spectrum.
248.049	$(1,2)^+$	96.24 [†] <i>3</i> 111.9 [†]	35 [†] 2 <7 [†]	151.806 136.332	$(1)^+$ (1)				
		173.27 [†] 3	100 [†] 4	74.782	(2) ⁺	M1(+E2)	<0.6	0.091 15	B(M1)(W.u.)>0.0057 α (K)=0.078 <i>13</i> ; α (L)=0.0103 <i>24</i> ; α (M)=0.0019 <i>5</i> α (N)=0.00031 <i>7</i> ; α (O)=1.40×10 ⁻⁵ <i>17</i> Mult,δ: from ce data in (p,nγ).
255.73 281.98	(0,1,2) $(1,2,3)^+$	119.4 [†] <i>1</i> 26.2 ^{†b}	100 <11 [†]	136.332 255.73	(1) (0.1.2)				E_{γ} : Unresolved peak in (p,n γ).
	(-,_,_)	207.20 [†] 3	100 [†] 7	74.782	(2) ⁺	M1(+E2)	<0.4	0.051 4	$\alpha(K)=0.044 \ 3; \ \alpha(L)=0.0055 \ 6; \ \alpha(M)=0.00102 \ 11 \ \alpha(N)=0.000168 \ 17; \ \alpha(O)=8.1\times10^{-6} \ 5 \ B(M1)(W.u.)>0.0052 \ Mult,\delta: from ce data in (p,n\gamma).$
325.17	(≤3)	43.19 [†] <i>12</i> 188.9 [†]	$100^{\dagger} 43 \\ \approx 230^{\dagger}$	281.98 136.332	$(1,2,3)^+$ (1)				
329.4		158.3 [†] 5		171.094	$(0^{-} \text{ to } 4^{-})$				
357.54	(6+)	138.1 2	76 14	219.58	(7+)	D(+Q)	+0.05 +3-8		E_{γ} : from (⁷ Li,3n γ). Other: 138.0 2 from (⁶ Li,4n γ). I _{γ} : unweighted average of 62 7 from (⁷ Li,3n γ) and 90.8 from (⁶ I i 4n γ)
		249.9 2	100 10	107.59	(5 ⁺)	M1(+E2)	-0.08 +12-5	0.0289 5	$\alpha(K)=0.0253 \ 4; \ \alpha(L)=0.00301 \ 6; \ \alpha(M)=0.000560$ 11

$\gamma(^{100}\text{Rh})$ (continued)

 $\delta^{\#}$

α[@]

Comments

Mult.#

 \mathbf{J}_{f}^{π}

 \mathbf{E}_{f}

86.325 (1,2)

32.686 (2)-

0.0 1-

-

 \mathbf{J}_i^{π}

 $(0^{-} \text{ to } 3^{-})$

 E_i (level)

160.685

Eγ

74.40[†] 10

128.00[†] 3

160.68[†] 3

Iγ

93† 7

100[†] 7

≈133[†]

	Adopted Levels, Gammas (continued)												
						$\gamma(^{100}\text{Rh})$	(continued)						
E _i (level)	\mathbf{J}_i^{π}	Eγ	I_{γ}	\mathbf{E}_{f}	J_f^π	Mult. [#]	$\delta^{\#}$	α [@]	Comments				
									$ α(N)=9.30\times10^{-5} 17; α(O)=4.69\times10^{-6} 8 $ $ E_{\gamma},I_{\gamma}: from (^{7}Li,3n\gamma) and (^{6}Li,4n\gamma). $ δ: other: α(K)exp in (⁷ Li,3nγ) gives δ<0.65.				
376.7	(0 ⁻ to 4 ⁻)	$290.5^{\dagger} 5$		86.325	(1,2)								
389.7	(≤4)	343.9 [†] 5 218.5 [†] 5		32.686 171.094	(2) $(0^{-} \text{ to } 4^{-})$								
		303.4 5		86.325	(1,2)								
438.62	(7 ⁺)	81.1 <i>I</i>	27 5	357.54	(6 ⁺)	D+Q			E _{γ} : weighted average of 81.1 <i>I</i> from (⁷ Li,3n γ) and 81.1 2 from (⁶ Li,4n γ). I _{γ} : weighted average of 28 5 from (⁶ Li,4n γ) and				
		195.2 2	100 10	243.47	(6+)	M1(+E2)	<0.09	0.0553 9	26 5 from (α ,2np γ). Other: 6.9 20 from (⁷ Li,3n γ) is discrepant. α (K)=0.0483 8; α (L)=0.00580 10; α (M)=0.001079 18				
									α (N)=0.000179 <i>3</i> ; α (O)=8.99×10 ⁻⁶ <i>14</i> E _{γ} : weighted average of 195.2 <i>2</i> from (⁷ Li,3n γ) and 195.1 <i>2</i> from (⁶ Li,4n γ). I _{γ} : from (⁷ Li,3n γ) and (⁶ Li,4n γ). Other: 100 <i>17</i> from (α ,2np γ).				
		218.9 2	15.9 20	219.58	(7')	M1(+E2)	+0.27 +9-45	0.0435 21	$\alpha(K)=0.0379 T/; \alpha(L)=0.0047 3; \alpha(M)=0.00087 6$ $\alpha(N)=0.000143 9; \alpha(O)=6.94\times10^{-6} 25$ E_{γ} : weighted average of 218.8 3 from (³⁶ S,p5n γ), 218.8 2 from (⁷ Li,3n γ), and 219.1 2 from (⁶ Li,4n γ).				
									I _{γ} : weighted average of 15.7 20 from (⁷ Li,3n γ), 16 3 from (⁶ Li,4n γ), and 20 9 from (α ,2np γ).				
		331.0 3	15.2 20	107.59	(5+)	E2		0.0204	Mult.: $\Delta J=0$ from $\gamma(\theta)$ (1986Du04) in (⁷ Li,3n γ). $\alpha(K)=0.0175$ 3; $\alpha(L)=0.00235$ 4; $\alpha(M)=0.000438$ 7 $\alpha(N)=7.10\times10^{-5}$ 11; $\alpha(O)=2.98\times10^{-6}$ 5 E_{γ} : weighted average of 331.1 3 from (⁷ Li,3n γ) and 330.9 2 from (⁶ Li,4n γ). L: weighted average of 15.7 20 from (⁷ Li 3n γ)				
									16 3 from (⁶ Li,4n γ), and 12 4 from (α ,2n γ).				
445.51	(≤3)	163.55 [†] 5	9.2^{\dagger} 17	281.98	$(1,2,3)^+$								
		286.701 3 309.2 [†]	100' 7 ∼19 [†]	158.804	1^{+} (1)								
473.2		312.5 [†] 5	~17	160.685	$(0^{-} \text{ to } 3^{-})$								
517.72	(≤3)	192.2 [†]	<6 [†]	325.17	(≤3)								
		365.91 [†] 4	100 [†] 7	151.806	$(1)^{+}$								

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						Adopted	Levels, Gamma	s (continued)	
						<u> </u>	(¹⁰⁰ Rh) (contin	ued)	
E _i (level)	\mathbf{J}_i^{π}	Eγ	Iγ	E_f	J_f^π	Mult. [#]	δ#	α [@]	Comments
531.9 561.0 887.1	(8+)	360.8 [†] 5 389.9 [†] 5 448.4 2	100	171.094 171.094 438.62	(0 ⁻ to 4 ⁻) (0 ⁻ to 4 ⁻) (7 ⁺)	M1(+E2)	<0.12	0.00664	$\alpha(K)=0.00581$ 9; $\alpha(L)=0.000679$ 10; $\alpha(M)=0.0001261$ 18
1197.6	(9+)	310.6 <i>3</i> 758.8 <i>3</i>	37 5 100 <i>11</i>	887.1 438.62	(8 ⁺) (7 ⁺)	D (E2)		0.00182	$\begin{aligned} &\alpha(N)=2.10\times10^{-5} \ 3; \ \alpha(O)=1.072\times10^{-6} \ 15 \\ &E_{\gamma}: \ from \ (^{7}Li,3n\gamma) \ and \ (^{6}Li,4n\gamma). \\ &E_{\gamma},I_{\gamma}: \ from \ (^{7}Li,3n\gamma) \ only. \\ &\alpha(K)=0.001590 \ 23; \ \alpha(L)=0.000190 \ 3; \\ &\alpha(M)=3.52\times10^{-5} \ 5 \end{aligned}$
1270.4	(8-)	383.2 2	27 5	887.1	(8+)	E1		0.00345	$\alpha(N)=5.82 \times 10^{-6} \ 9; \ \alpha(O)=2.84 \times 10^{-7} \ 4$ $E_{\gamma},I_{\gamma}: \text{ from } (^{7}\text{Li},3n\gamma) \text{ only.}$ B(E1)(W.u.)>0.007 $\alpha(K)=0.00303 \ 5; \ \alpha(L)=0.000349 \ 5; \ \alpha(M)=6.46 \times 10^{-5} \ 9$ $\alpha(N)=1.067 \times 10^{-5} \ 15; \ \alpha(O)=5.28 \times 10^{-7} \ 8$
									E _y : weighted average of 383.2 <i>3</i> from (⁷ Li,3ny) and 383.2 <i>2</i> from (⁶ Li,4ny). I _y : weighted average of 39 7 from (⁷ Li,3ny), 22 <i>4</i> from (⁶ Li,4ny), and 31 <i>13</i> from (α ,2npy).
		831.9 2	36 9	438.62	(7+)	E1(+M2)	<0.011	5.80×10 ⁻⁴	Mult.: $\Delta J=0$ from $\gamma(\theta)$ (1986Du04) in (⁷ Li,3n γ). B(E1)(W.u.)>0.0009 α (K)=0.000510 8; α (L)=5.78×10 ⁻⁵ 8; α (M)=1.068×10 ⁻⁵ 15 α (N)=1.773×10 ⁻⁶ 25; α (O)=9.05×10 ⁻⁸ 13
									E _{γ} : weighted average of 832.0 <i>3</i> from (⁷ Li,3n γ) and 831.8 2 from (⁶ Li,4n γ). I _{γ} : unweighted average of 45 7 from (⁷ Li,3n γ) and 27 5 from (⁶ Li,4n γ).
									in $({}^{7}\text{Li},3n\gamma)$, 1986Du04 give +0.27 5, but the authors point out that the apparent large δ is probably due to a γ ray from an unidentified impurity.
		1050.9 3	100 5	219.58	(7+)	E1		3.67×10 ⁻⁴	B(E1)(W.u.)>0.0015 $\alpha(K)=0.000323 \ 5; \ \alpha(L)=3.64\times10^{-5} \ 6; \ \alpha(M)=6.73\times10^{-6} \ 10$ $\alpha(N)=1.118\times10^{-6} \ 16; \ \alpha(O)=5.75\times10^{-8} \ 8$ E _{γ} : weighted average of 1050.4 3 from (⁷ Li,3n γ) and 1051.1 2 from (⁶ Li,4n γ).
1403.5	(9 ⁻)	133.1 2	100 10	1270.4	(8 ⁻)	D(+Q)	-0.06 +9-3		I _{γ} : from (⁶ Li,4n γ). Others: 100 <i>10</i> from (⁷ Li,3n γ) and 100 <i>16</i> from (α ,2np γ). E _{γ} : weighted average of 133.1 2 from (⁷ Li,3n γ) and

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From ENSDF

$\gamma(^{100}\text{Rh})$ (continued)

E_i (level)	\mathbf{J}_i^{π}	Eγ	I_{γ}	E_f	\mathbf{J}_{f}^{π}	Mult. [#]	α [@]	Comments
1403.5	(9 ⁻)	516.3 ^{&} 2	26 5	887.1	(8+)	E1	1.66×10 ⁻³	133.0 2 from (⁶ Li,4n γ). I _{γ} : from (⁶ Li,4n γ). Other: 100 12 from (⁷ Li,3n γ). α (K)=0.001453 21; α (L)=0.0001665 24; α (M)=3.08×10 ⁻⁵ 5 α (N)=5.10×10 ⁻⁶ 8; α (O)=2.56×10 ⁻⁷ 4 E _{γ} : weighted average of 516.2 3 from (⁷ Li,3n γ) and 516.4 2 from
1732.8 1800.9	(9,10) (10 ⁻)	535.2 <i>4</i> 397.5 <i>2</i>	100 100	1197.6 1403.5	(9 ⁺) (9 ⁻)	D M1	0.00890	(°L1,4n γ). I _{γ} : weighted average of 23 <i>3</i> from (⁷ Li,3n γ) and 34 <i>5</i> from (⁶ Li,4n γ). E _{γ} : from (⁷ Li,3n γ) only. α (K)=0.00779 <i>11</i> ; α (L)=0.000914 <i>13</i> ; α (M)=0.0001696 <i>24</i> α (N)=2.82×10 ⁻⁵ <i>4</i> ; α (O)=1.440×10 ⁻⁶ <i>21</i> E _{γ} : from (⁷ Li,3n γ) and (⁶ Li,4n γ).
2127.5	(11 ⁻)	530 [‡] 326.6 2	100 11	1270.4 1800.9	(8 ⁻) (10 ⁻)	M1(+E2)	0.018 4	α (K)=0.015 3; α (L)=0.0020 5; α (M)=0.00037 9 α (N)=6.0×10 ⁻⁵ 14; α (O)=2.7×10 ⁻⁶ 4
		723.7 4	53 7	1403.5	(9-)	(E2)	0.00205	E _γ : weighted average of 326.6 <i>3</i> from (⁷ Li,3nγ) and 326.6 2 from (⁶ Li,4nγ). I _γ : from (⁶ Li,4nγ). Other: 100 <i>13</i> from (⁷ Li,3nγ). $\alpha(K)=0.00179 \ 3; \ \alpha(L)=0.000215 \ 3; \ \alpha(M)=3.99\times10^{-5} \ 6$ $\alpha(N)=6.58\times10^{-6} \ 10; \ \alpha(O)=3.19\times10^{-7} \ 5$ E _γ : weighted average of 723.8 <i>4</i> from (⁷ Li,3nγ) and 723 <i>1</i> from (⁶ Li,4nγ). I _γ : weighted average of 53 7 from (⁷ Li,3nγ) and 52 8 from (⁶ Li,4nγ).
2190.3	(10 ⁻)	389 [‡] 787.0 <i>3</i>		1800.9 1403.5	(10 ⁻) (9 ⁻)			E_{γ} : from (⁷ Li,3n γ).
2546.4	(11 ⁻)	356 [‡] 745 [‡]		2190.3 1800.9	(10^{-}) (10^{-})			
2595.9	(12 ⁻)	468.3 ^{<i>a</i>} 2	100 ^{<i>a</i>} 33	2127.5	(11-)	(M1)	0.00597	$\alpha(K)=0.00522 \ 8; \ \alpha(L)=0.000610 \ 9; \ \alpha(M)=0.0001131 \ 16$ $\alpha(N)=1.88\times10^{-5} \ 3; \ \alpha(O)=9.64\times10^{-7} \ 14$ $E_{\gamma}: weighted average of 468.4 \ 2 \ from (^{7}Li,3n\gamma) and 468.2 \ 2 \ from (^{6}Li,4n\gamma).$ $I_{\gamma}: \ from (^{7}Li,3n\gamma).$
		795.1 5	12 4	1800.9	(10 ⁻)			E_{γ}, I_{γ} : from (⁷ Li, 3n γ).
2610.1	(11 ⁻)	420		2190.3	(10 ⁻)			
2910.8	(12 ⁻)	301 [‡]		2610.1	(11 ⁻)			
		364		2546.4	(11 ⁻)			
		721		2190.3	(10 ⁻)			
3064 3	(13^{-})	783 + 468 3 ^a 2	<62 ^a	2127.5 2595 9	(11^{-}) (12^{-})	(M1)	0.00597	$\alpha(K) = 0.00522.8$; $\alpha(I) = 0.000610.9$; $\alpha(M) = 0.0001131.16$
5005	(15)	100.5 2	N04	4393.9	(12)	(1411)	0.00577	a(ii)=0.00022 0, a(ii)=0.000010 7, a(iii)=0.0001151 10

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						A	lopted Levels	, Gammas (continued)
							$\gamma(^{100}\text{R})$	h) (continued)
E _i (level)	\mathbf{J}_i^{π}	Eγ	I_{γ}	\mathbf{E}_{f}	J_f^π	Mult. [#]	α [@]	Comments
3064.3	(13 ⁻)	936.9 2	100 23	2127.5	(11 ⁻)	(E2)	1.10×10 ⁻³	$\begin{aligned} &\alpha(\mathrm{N}) = 1.88 \times 10^{-5} \ 3; \ \alpha(\mathrm{O}) = 9.64 \times 10^{-7} \ 14 \\ & \mathrm{E}_{\gamma}: \ \text{weighted average of } 468.4 \ 2 \ \mathrm{from} \ (^{7}\mathrm{Li},3n\gamma) \ \mathrm{and} \ 468.2 \ 2 \ \mathrm{from} \ (^{6}\mathrm{Li},4n\gamma). \\ & \mathrm{E}_{\gamma},\mathrm{I}_{\gamma}: \ \mathrm{from} \ (^{7}\mathrm{Li},3n\gamma). \\ & \alpha(\mathrm{K}) = 0.000959 \ 14; \ \alpha(\mathrm{L}) = 0.0001125 \ 16; \ \alpha(\mathrm{M}) = 2.09 \times 10^{-5} \ 3 \\ & \alpha(\mathrm{N}) = 3.45 \times 10^{-6} \ 5; \ \alpha(\mathrm{O}) = 1.718 \times 10^{-7} \ 24 \\ & \mathrm{E}_{\gamma}: \ \mathrm{weighted} \ \mathrm{average} \ \mathrm{of} \ 937.0 \ 3 \ \mathrm{from} \ (^{7}\mathrm{Li},3n\gamma) \ \mathrm{and} \ 936.9 \ 2 \ \mathrm{from} \ (^{6}\mathrm{Li},4n\gamma). \\ & \mathrm{I}_{\gamma}: \ \mathrm{from} \ (^{7}\mathrm{Li},3n\gamma). \\ & \mathrm{Mult.: \ ce \ data \ give \ mult = M1,E2, \ but \ E2 \ consistent \ with \ band \ assignment. \end{aligned}$
3217.8	(13 ⁻)	307 [‡]		2910.8	(12 ⁻)			
2400 6	(14-)	622^+		2595.9	(12^{-})			
3490.6	(14)	426 <i>1</i>		3064.3	(13) (13 ⁻)	M1,E2	0.0083 9	α (K)=0.0072 7; α (L)=0.00089 13; α (M)=0.000166 23 α (N)=2.7×10 ⁻⁵ 4; α (O)=1.29×10 ⁻⁶ 9 E _{γ} : from (⁷ Li,3n γ) and (⁶ Li,4n γ). Mult.: from α (K)exp in (⁷ Li,3n γ).
		895 [‡]		2595.9	(12 ⁻)			
3580.6	(14 ⁻)	516.2 ^{&} 3		3064.3	(13 ⁻)			E_{γ} : from (⁷ Li,3n γ).
		985 [‡]		2595.9	(12 ⁻)			
3948.8	(15 ⁻)	368+		3580.6	(14^{-})			E + from (6L + 1m)
		430 I 731‡		3217.8	(14^{-})			E_{γ} . Holli (Li,4li γ).
		885 [‡]		3064.3	(13^{-})			
4389.9?	(16)	441^{b} 1		3948.8	(15^{-})			E_{γ} : from (⁶ Li,4n γ) only.
4563.0	(16 ⁻)	614‡		3948.8	(15 ⁻)			
		982 [‡]		3580.6	(14-)			
4616.0	(16 ⁻)	667 [‡]		3948.8	(15 ⁻)			
		1126‡		3490.6	(14^{-})			
5003.7	(17-)	388		4616.0	(16 ⁻)			
		440 [‡]		4563.0	(16 ⁻)			
		1055+		3948.8	(15 ⁻)			
5638.8	(18 ⁻)	635+ 1076 [†]		5003.7	(17^{-})			
6174.0	(10-)	10/6 [#]		4563.0	(10)			
01/4.8	(19)	1171		5003.7	(10) (17^{-})			
6486 7	(10^{-})	848		5638.8	(17) (18^{-})			
0-100.7	(1)]	1483 [‡]		5003 7	(10^{-})			
6831.7	(20^{-})	657 [‡]		6174.8	(19^{-})			
0001.7	(20)	007		01/1.0				

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						Adopted Levels, Gammas (continued)					
							$\gamma(^{100}\text{Rh})$ (continued)				
\mathbf{J}_i^{π}	Eγ	E_f	J_f^π	E _i (level)	\mathbf{J}_i^{π}	Eγ	\mathbf{E}_{f}	${ m J}_f^\pi$	E _i (level)	Eγ	E_f
(20 ⁻)	1193‡	5638.8	(18 ⁻)	9103.1	(23 ⁻)	1062‡	8041.4	(22 ⁻)	11085.9	1483‡	9602.9
(21-)	583 [‡]	6831.7	(20 ⁻)			1688 [‡]	7414.9	(21 ⁻)	11406.9	1003‡	10403.9
	1240‡	6174.8	(19 ⁻)	9303.4	(24 ⁻)	1262‡	8041.4	(22 ⁻)	12697.4	1823‡	10874.4
(22 ⁻)	626 [‡]	7414.9	(21 ⁻)	9602.9		500 [‡]	9103.1	(23 ⁻)	12922.9	1516 [‡]	11406.9
	1210 [‡]	6831.7	(20 ⁻)			601 [‡]	9001.7	(23 ⁻)	14518.9	1596 [‡]	12922.9
(23 ⁻)	960 [‡]	8041.4	(22 ⁻)	10403.9		801 [‡]	9602.9				
	1587 [‡]	7414.9	(21 ⁻)	10874.4		1571 [‡]	9303.4	(24 ⁻)			
	$\frac{\mathbf{J}_{i}^{\pi}}{(20^{-})}$ (21 ⁻) (22 ⁻) (23 ⁻)	$ \frac{J_i^{\pi}}{(20^-)} \frac{E_{\gamma}}{1193^{\ddagger}} \\ (21^-) 583^{\ddagger} \\ 1240^{\ddagger} \\ (22^-) 626^{\ddagger} \\ 1210^{\ddagger} \\ (23^-) 960^{\ddagger} \\ 1587^{\ddagger} $	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\begin{array}{c ccccc} & & & & & & & & & & & & & & & & &$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\begin{array}{c c c c c c c c c c c c c c c c c c c $				

[†] From (p,n γ) only.

* From $(^{36}S, p5n\gamma)$ only. * From $(^{36}S, p5n\gamma)$ only. * From ce data in ¹⁰⁰Pd ε decay for low spin states (J<5). For high spin states (J>5), mult assignments and δ values are from ce, $\gamma(\theta)$ and $\gamma(\ln pol)$ data in $^{96}Mo(^{7}Li, 3n\gamma)$. Exceptions are noted.

[@] Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ -ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.

[&] Multiply placed.

^a Multiply placed with intensity suitably divided.
 ^b Placement of transition in the level scheme is uncertain.

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 $^{100}_{\ 45}\rm{Rh}_{55}$

Adopted Levels, Gammas Legend Level Scheme (continued) Intensities: Relative photon branching from each level @ Multiply placed: intensity suitably divided - ► γ Decay (Uncertain) $\downarrow^{2_{5_0}}_{6_{0_2}}$ 8 . S (13⁻) 3217.8 (13⁻) 3064.3 20 2 5 S $| \frac{1}{1} |_{95,1}^{25,1} |_{2} \\ |_{968,3}^{25,1} |_{2} \\ |_{90_{0}} |_{10_{0_{0}}} |_{2}$ (12-) 2910.8 0°7 2610.1 (11^{-}) $\frac{(12^{-})}{(11^{-})}$ 2595.9 2546.4 $\frac{1}{2} \sum_{\substack{3,2\\2,3\\2,6} \in M_1(e_2), s_3} \sum_{\substack{3,2\\6 \in M_1(e_2), l_{00}}} -$ 6. 6. 82 (10^{-}) 2190.3 (11-) 2127.5 + 39.5 M1 100 + 53 52 D 100 S. (10⁻) 1800.9 (9,10) $\frac{1}{2} s_{\epsilon_{3}} s_{\epsilon_{2}} s_{\epsilon_{$ 1732.8 $\left[\begin{array}{c} 3^{8}_{3,8,8,6(2)} \\ 3^{0,6}_{0,3,2,0(2)} \\ 3^{0,6}_{0,3,2,0(2)} \end{array} \right]$ (9^{-}) 1403.5 (8-) 1270.4 <0.1 ps 01(63+3)14 5-3+5+ (9^+) 1197.6 (8^+) 887.1 6.98⁶ 8 561.0 8.00¹ 6 531.9 ó (≤3) 517.72 <0.35 ns 473.2 (7+) 438.62 $\frac{\frac{(r)}{(\leq 3)}}{(7^+)}$ 325.17 <0.35 ns 132 ns 6 <0.35 ns 219.58 (0⁻ to 4⁻) 171.094 $\frac{(0^{-} \text{ to } 3^{-})}{(1)^{+}}$ ¥ ¥ 160.685 3.95 ns 21 151.806 0.97 ns 14 0.0 1-20.5 h 3



Legend

Adopted Levels, Gammas



 $^{100}_{45} \mathrm{Rh}_{55}$

Adopted Levels, Gammas



 $^{100}_{45} Rh_{55}$

Adopted Levels, Gammas



 $^{100}_{\ 45}\mathrm{Rh}_{55}$