^{174}Yb(^{19}F,6nγ):XUNDL-2 2020Se02

Compiled (unevaluated) dataset from 2020Se02: Phys Rev Lett 124, 052501 (2020).
Compiled by B. Singh (McMaster), Feb 26, 2020.
2020Se02: first report of a longitudinal wobbler band, where an odd nucleon aligns its angular momentum with the medium length axis in a triaxial nucleus with all the three axis of unequal lengths. E(^{19}F)=105, 115 MeV beam from ATLAS-ANL facility. Target=enriched ^{174}Yb of 13 mg/cm^2 thickness on 33 mg/cm^2 ^{208}Pb backing. Measured Eγ, Iγ, three and higher-fold $\gamma\gamma$-coin, $\gamma(\theta)$ using 57 Ge detectors of the Gammasphere array for E(^{19}F)=105 MeV run, and 73 Ge detectors of the array for E(^{19}F)=115 MeV. Deduced high-spin levels, J^π, collective bands, wobbling band, B(M1)/B(E2) and B(E2,out)/B(E2,in). Comparison with particle-rotor model calculations.
In reference 26 of this paper, authors mention that spectroscopic details of this work will be presented in a forthcoming publication.

^{187}Au Levels

E(level)[†]	J$^\pi$[#]	T$_{1/2}$	Comments
0.0[‡]	1/2$^{(+)}$[‡]		
19.5[‡] *4*	3/2$^{(+)}$[‡]		
120.5[@] *5*	9/2$^-$	2.3 s *1*	%IT=100 Half-life and decay mode from ^{187}Au Adopted Levels in the ENSDF database (Nov 2008 update).
353.3[@] *5*	13/2$^-$		
385.8[&] *5*	11/2$^-$		
496.5[a] *5*	11/2$^-$		
687.0[@] *6*	17/2$^-$		
790.0[&] *6*	15/2$^-$		
815.2[a] *5*	15/2$^-$		
1100.3[@] *6*	21/2$^-$		
1202.3[&] *7*	19/2$^-$		
1231.7[a] *6*	19/2$^-$		
1591.2[@] *7*	25/2$^-$		
1739.3[a] *6*	23/2$^-$		
1750.9[&] *7*	23/2$^-$		
2158.4[@] *7*	29/2$^-$		
2354.7[a] *7*	27/2$^-$		
2796.2[@] *8*	33/2$^-$		
3013.7[a] *7*	31/2$^-$		
3502.0[@] *8*	37/2$^-$		
4259.6[@] *9*	41/2$^-$		
5036.5[@] *9*	45/2$^-$		

[†] From least-squares fit to the γ-ray energies, assuming 0.3 keV uncertainty for Eγ values in the present work.
[‡] Level from ^{187}Au Adopted Levels in the ENSDF database (Nov 2008 update).
[#] As given in 2020Se02 based on previous data for most levels, except for the levels in SP band, which are new here.
[@] Band(A): Yrast band,α=+1/2.
[&] Band(a): Signature partner of yrast band,α=−1/2.
[a] Band(B): Wobbling band based on 11/2$^-$. Interpreted as a longitudinal wobbler band from dominant, ΔJ=1, E2 interband transitions to the yrast band, consistent with theoretical predictions.

^{174}Yb(^{19}F,6nγ):XUNDL-2 2020Se02 (continued)

$\gamma(^{187}Au)$

E_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	δ[#]
19.5[†] *4*	19.5	3/2(+)	0.0	1/2(+)		
101.0[†] *2*	120.5	9/2−	19.5	3/2(+)		
232.5	353.3	13/2−	120.5	9/2−	E2	
265.3	385.8	11/2−	120.5	9/2−	M1+E2	−0.06 *1*
319.0	815.2	15/2−	496.5	11/2−	E2	
333.8	687.0	17/2−	353.3	13/2−	E2+M3	−0.04 *1*
376.3	496.5	11/2−	120.5	9/2−	E2+M1	−2.67 *7*
404.5[‡]	790.0	15/2−	385.8	11/2−	E2	
412.3[‡]	1202.3	19/2−	790.0	15/2−	E2	
413.7	1100.3	21/2−	687.0	17/2−	E2+M3	−0.03 *1*
416.4	1231.7	19/2−	815.2	15/2−	E2	
429.2[‡]	815.2	15/2−	385.8	11/2−	E2	
436.5[‡]	790.0	15/2−	353.3	13/2−	M1+E2	−0.10 *1*
461.8	815.2	15/2−	353.3	13/2−	E2+M1	−2.98 *2*
491.1	1591.2	25/2−	1100.3	21/2−	E2	
507.1	1739.3	23/2−	1231.7	19/2−	E2	
544.3	1231.7	19/2−	687.0	17/2−	E2+M1	−3.44 *3*
548.6[‡]	1750.9	23/2−	1202.3	19/2−	E2	
567.0	2158.4	29/2−	1591.2	25/2−	E2	
615.3	2354.7	27/2−	1739.3	23/2−	E2	
637.8	2796.2	33/2−	2158.4	29/2−	E2	
639.3	1739.3	23/2−	1100.3	21/2−	E2+M1	−3.72 *+11−12*
659.1	3013.7	31/2−	2354.7	27/2−	E2	
705.8	3502.0	37/2−	2796.2	33/2−	E2	
757.6	4259.6	41/2−	3502.0	37/2−	E2	
763.7[‡]	2354.7	27/2−	1591.2	25/2−	M1+E2	
776.9	5036.5	45/2−	4259.6	41/2−	E2	
855.2[‡]	3013.7	31/2−	2158.4	29/2−	M1+E2	

[†] From ^{187}Au Adopted dataset in the ENSDF database (Nov 2008 update).

[‡] New γ ray observed by 2020Se02.

[#] From $\gamma(\theta)$ data in 2020Se02. It is assumed by compiler that the sign of the mixing ratio in this work follows Krane-Steffen convention.

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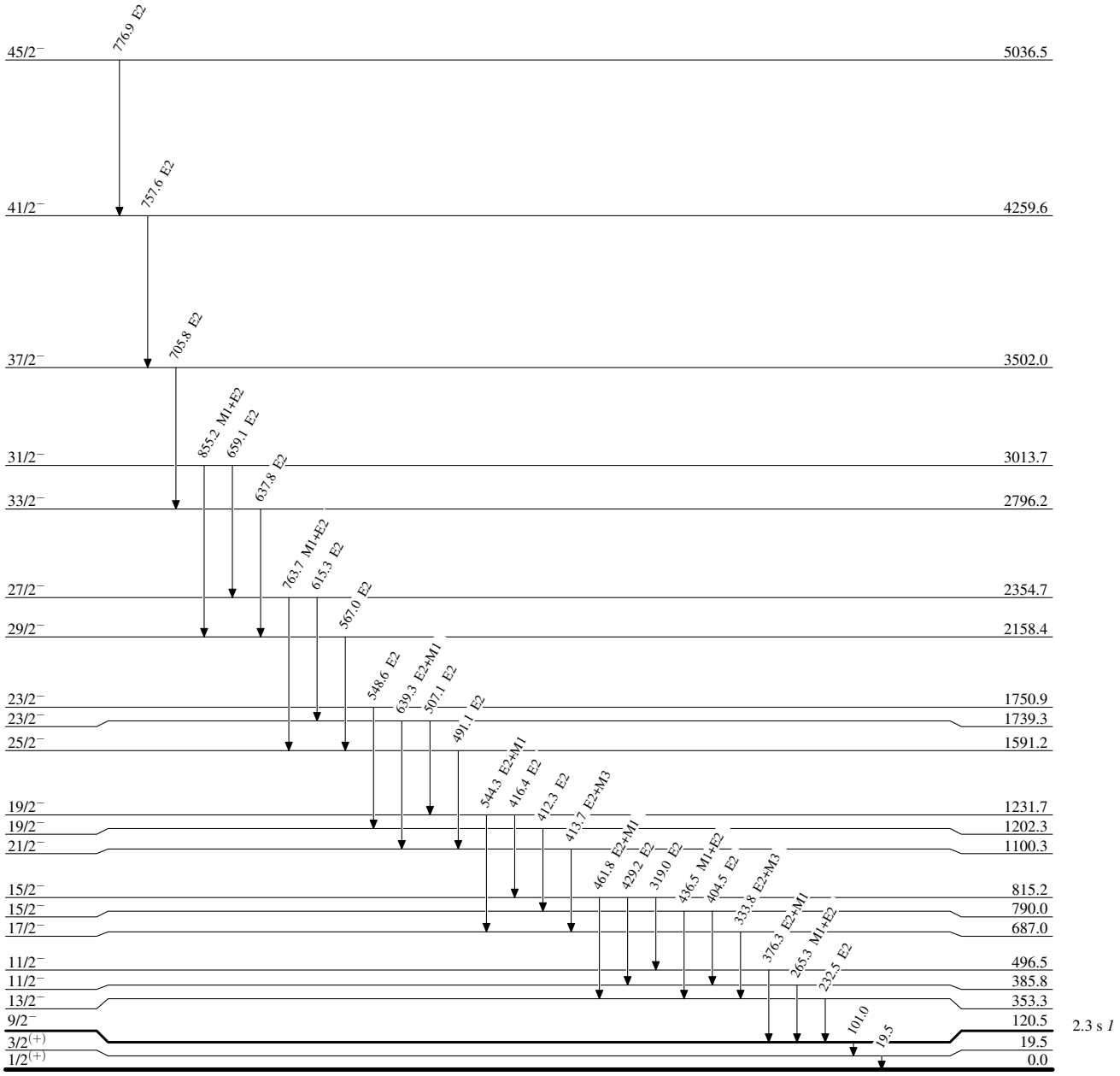
Level Scheme



$^{187}_{79}Au_{108}$

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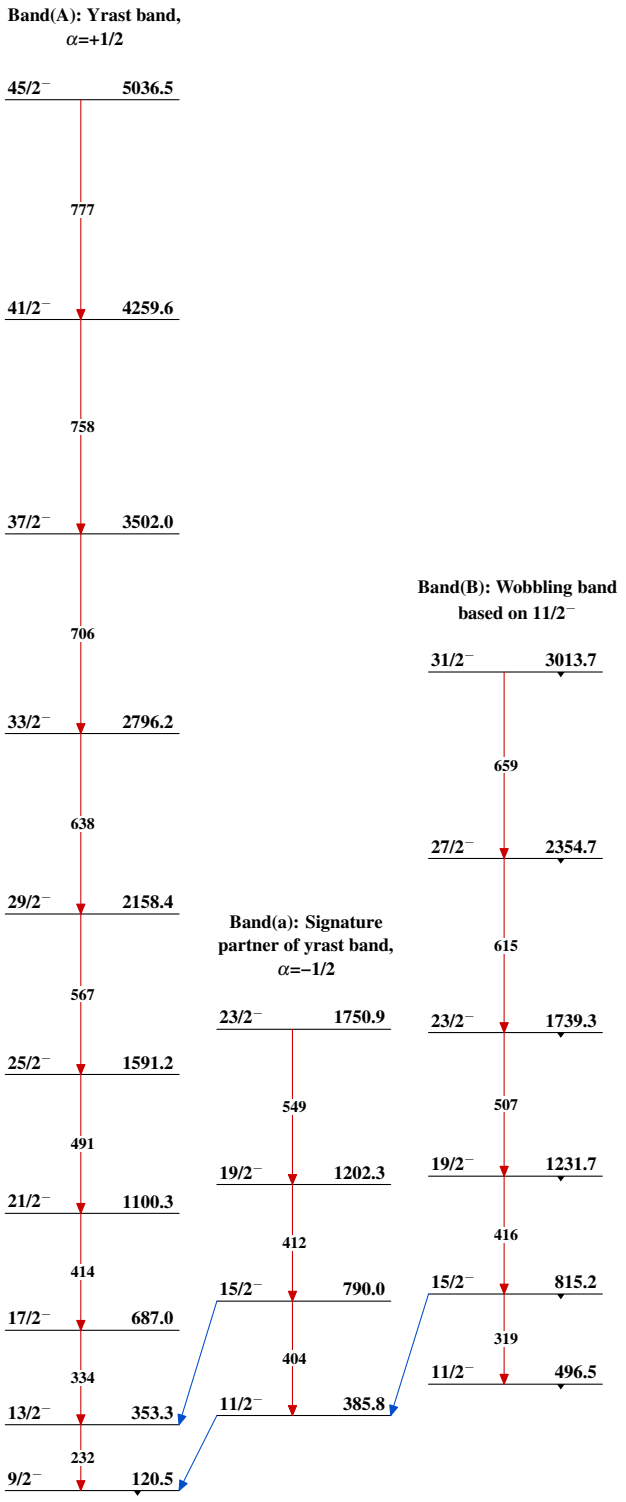

$^{187}_{79}Au_{108}$