²³¹Pa(γ,γ):Mossbauer 1978Fr28,1968Cr08

	History						
Туре	Author	Citation	Literature Cutoff Date				
Full Evaluation	Balraj Singh, Jagdish K. Tuli, and Edgardo Browne	NDS 185, 560 (2022)	31-Aug-2022				

1978Fr28: measured Mossbauer spectra at 4.2° K and 65° K using ²³¹ThO₂ as a source and Pa metal as absorber. Two resonance lines of equal intensity were observed. The spectra were least square fitted to a theoretical line shape for dipole transitions between the quadrupole hyperfine levels of the 5/2 excited state at 84.2 keV and the 3/2 ground state. Deduced quadrupole moment of the 84.2-keV level.

1968Cr08: source for the experiment was 25.57-h ²³¹Th in the form of ²³¹ThO₂. The absorber was ²³¹Pa in the form of ²³¹PaO₂ and ²³¹Pa₂O₅. The Mossbauer spectra were obtained at 4.2°K, a wide resonant peak was detected, probably an unresolved doublet, from which no definite conclusions could be made.

Additional information 1.

²³¹Pa Levels

E(level) [†]	J^{π}^{\dagger}	Comments		
0.0	3/2-	Q=-1.72 5 (1978Fr28)		
84.21	5/2+	 Q: estimated by 1978Fr28 from B(E2) for 58.6 level. Q=+0.7 2 (1978Fr28) Q: Mossbauer effect (1978Fr28), deduced from measured Q(84.2 level)/Q(g.s.)=-0.4 <i>1</i>, and estimated Q(g.s.)=-1.72 <i>5</i>. 		

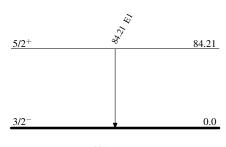
[†] From the Adopted Levels. Energy of the 84.21 level is rounded value.

$\gamma(^{231}\text{Pa})$

Eγ	E_i (level)	\mathbf{J}_i^{π}	$E_f J_f^{\pi}$	Mult.	Comments
84.21	84.21	5/2+	0.0 3/2-	E1	E_{γ} ,Mult.: from the Adopted Gammas. Energy is rounded value.

2²³¹Pa(γ,γ):Mossbauer 1978Fr28,1968Cr08

Level Scheme



 $^{231}_{91}{
m Pa}_{140}$