^{196}Pt(n,γ) E=2,24 keV 1983Ca04

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Huang Xiaolong, Zhou Chunmei	NDS 104, 283 (2005)	1-Jan-2002

Other: 1983CaZZ.

Average resonance neutron capture, measured Eγ, Iγ with Ge(Li); compared with multi-J supersymmetry in the interacting boson fermion approximation model.

^{197}Pt Levels

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The spin and parity assignments are based on the following criteria:
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Iγ(r)(2  keV)/Iγ(r)(24  keV) a     Jπ   b              comments
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ratio of reduced primary
   γ-ray  intensities
        ≥0.24                    1/2−,3/2−       if Iγ(r)(2  keV) ≥30
        ≤0.24                    1/2±,3/2±        if 10<Iγ(r)(2  keV)<30
                                 1/2+,3/2+,5/2+  if 5<Iγ(r)
                                                 (2 keV) ≤10,
                                                 observed at
                                                 24 keV
                               (1/2+,3/2+),5/2±  if not
                                                  observed
                                                  at 2 keV, and if
                                                  weak at 24 keV
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 a  Reduced Intensity Iγ(r)=Iγ/Eγ^5
 b  at 2 keV, s-wave neutron capture dominates so that capture states
    oF Jπ=1/2+  are formed; the dominant decay model is E1 (M1).
    Transitions are weaker by roughly a factor of 6 so that final
    sTATES with Jπ=1/2−,3/2−  are populated. At 24 keV, p-wave neutron
    cAPTURE contributes strongly, leading to 1/2−,3/2− capture states
    aND combination with the still present s-wave capture, to
    cOMPARABLE intensities, to final states of 1/2−,3/2− and 1/2+,3/2+.
    sINCE p3/2 capture followed by E1 or (M1) transitions can lead to
    5/2+(-) states, these can be observed. Finally, the ratio of
    rEDUCED intensities, Iγ(r)(2  Kev)/Iγ(r)(24  Kev),
    iS used as the parity indicator.
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E(level)[†]	J^π[‡]	Iγ(r)(2 keV)/Iγ(r)(24 keV)[@]	Comments
0	$1/2^-,3/2^-$	1	Iγ(r)(2 keV)=100, Iγ(r)(24 keV)=100.
71.4 *5*	$1/2^-,3/2^-$	0.35	Iγ(r)(2 keV)=37.6 *18*, Iγ(r)(24 keV)=108.10.
98.6 *5*	$1/2^-,3/2^-$	0.34	Iγ(r)(2 keV)=58.9 *24*, Iγ(r)(24 keV)=174 *13*.
131.2 *5*	$1/2^-,3/2^-$	0.32	Iγ(r)(2 keV)=48.7 *21*, Iγ(r)(24 keV)=152 *11*.
268.9 *5*	$1/2^-,3/2^-$	0.24	Iγ(r)(2 keV)=30.9 *18*, Iγ(r)(24 keV)=128 *9*.
297.0[#]	$(1/2^+,3/2^+),5/2$		Iγ(r)(2 keV)=0, Iγ(r)(24 keV)=57 *14*.
502.7 *5*	$1/2^-,3/2^-$	0.46	Iγ(r)(2 keV)=53.8 *26*, Iγ(r)(24 keV)=117 *16*.
708.4 *5*	$1/2^-,3/2^-$	0.35	Iγ(r)(2 keV)=32.0 *24*, Iγ(r)(24 keV)=91 *19*.
747.4 *5*	$1/2^-,3/2^-$	0.39	Iγ(r)(2 keV)=50.0 *34*, Iγ(r)(24 keV)=130 *18*.
810.3[#]	$1/2^+,3/2^+,5/2$	≈0.05	Iγ(r)(2 keV)≈5 *2*, Iγ(r)(24 keV)=104 *18*.

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^{197}Pt Levels (continued)

E(level)†	Jπ‡	Iγ(r)(2 keV)/Iγ(r)(24 keV)@	Comments
894.8 *5*	1/2⁻,3/2⁻	0.32	Iγ(r)(2 keV)=51.0 *60*, Iγ(r)(24 keV)=158 *21*.
955.9? *14*		0.12&	Iγ(r)(2 keV)=6.5 *27*, Iγ(r)(24 keV)=56 *17*.
970.7 *5*	1/2,3/2	0.24	Iγ(r)(2 keV)=27.9 *60*, Iγ(r)(24 keV)=113 *21*.
977.9 *5*	1/2⁻,3/2⁻	0.38	Iγ(r)(2 keV)=63.6 *60*, Iγ(r)(24 keV)=165 *23*.
1060.5 *5*	1/2,3/2	0.20	Iγ(r)(2 keV)=29.6 *32*, Iγ(r)(24 keV)=150 *25*.
1081.0 *5*	1/2⁻,3/2⁻	0.38	Iγ(r)(2 keV)=43.4 *35*, Iγ(r)(24 keV)=113 *25*.
1107.7 *8*	1/2,3/2	0.11	Iγ(r)(2 keV)=12.3 *28*, Iγ(r)(24 keV)=115 *23*.
1135.3 *7*	1/2,3/2	0.24	Iγ(r)(2 keV)=14.1 *27*, Iγ(r)(24 keV)=56 *20*.
1158.7 *5*	1/2,3/2	0.09	Iγ(r)(2 keV)=15.7 *40*, Iγ(r)(24 keV)=178 *27*.
1297.0 *6*	1/2,3/2	0.18	Iγ(r)(2 keV)=27.0 *43*, Iγ(r)(24 keV)=146 *34*.
5848.8 *3*			

† From Eγ′s from 2 keV spectrum, except E(level)=810.3 and 297.0 taken from 24-keV n-capture data.
‡ From principle of average resonance neutron capture (ARC) spectroscopy.
# Excitation energy taken from 24-keV n-capture data. For the 297-keV level, 2-keV n-capture is not observed; for the 810-keV level, a weak peak is observed. Except for these two levels, the uncertainties on excitation energies are those of the corresponding γ-ray energies.
@ Iγ(r)(2 keV)/Iγ(r)(24 keV) ratio of the reduced primary γ-ray intensities for 2- and 24-keV average resonance capture (ARC), renormalized to Iγ(r)(2 keV)=100 and Iγ(r)(24 keV)=100 for the transition to g.s. respectively. Reduced intensity Iγ(r)=Iγ/Eγ^5.
& Possibly all contaminant.

γ(^{197}Pt)

Only primary γ ray from 2keV resonance given.

Eγ	E_i(level)	E_f	J^π_f	Eγ	E_i(level)	E_f	J^π_f
4551.7 *5*	5848.8	1297.0	1/2,3/2	4953.9 *3*	5848.8	894.8	1/2⁻,3/2⁻
4690.0 *4*	5848.8	1158.7	1/2,3/2	5101.3 *4*	5848.8	747.4	1/2⁻,3/2⁻
4713.4 *6*	5848.8	1135.3	1/2,3/2	5140.3 *4*	5848.8	708.4	1/2⁻,3/2⁻
4741.0 *7*	5848.8	1107.7	1/2,3/2	5346.0 *3*	5848.8	502.7	1/2⁻,3/2⁻
4767.7 *4*	5848.8	1081.0	1/2⁻,3/2⁻	5579.8 *3*	5848.8	268.9	1/2⁻,3/2⁻
4788.2 *4*	5848.8	1060.5	1/2,3/2	5717.5 *3*	5848.8	131.2	1/2⁻,3/2⁻
4870.8 *3*	5848.8	977.9	1/2⁻,3/2⁻	5750.1 *3*	5848.8	98.6	1/2⁻,3/2⁻
4878.0 *4*	5848.8	970.7	1/2,3/2	5777.3 *3*	5848.8	71.4	1/2⁻,3/2⁻
4892.8 *13*	5848.8	955.9?		5848.7 *3*	5848.8	0	1/2⁻,3/2⁻

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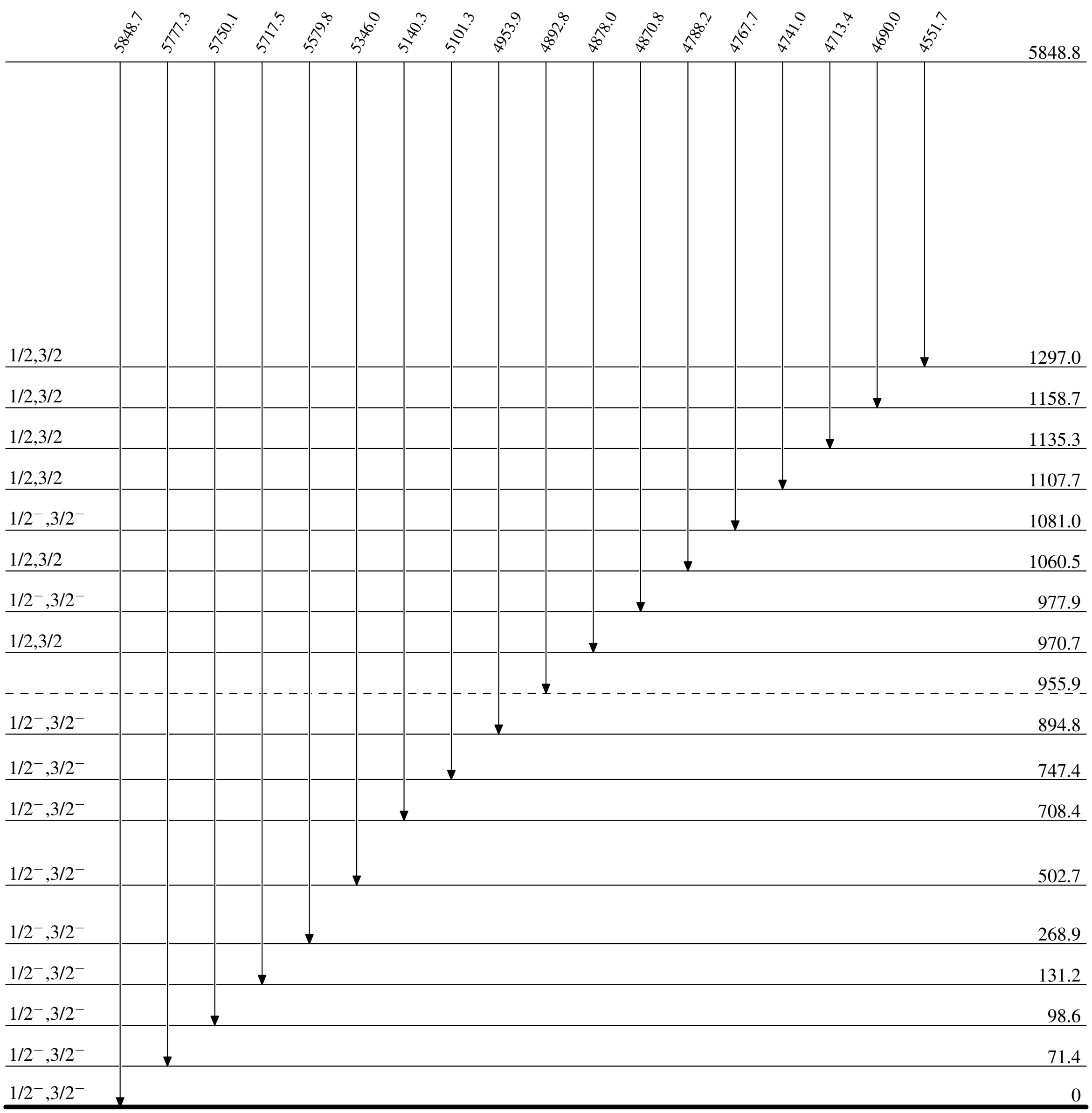
Level Scheme



$^{197}_{78}Pt_{119}$