

$^{192}\text{Ir}$  IT decay (241 y) [1959Sc41](#),[1977ScZU](#)

| Type            | Author          | History<br>Citation  | Literature Cutoff Date |
|-----------------|-----------------|----------------------|------------------------|
| Full Evaluation | Coral M. Baglin | NDS 113, 1871 (2012) | 15-Jun-2012            |

Parent:  $^{192}\text{Ir}$ : E=168.14 12;  $J^\pi=(11^-)$ ;  $T_{1/2}=241$  y 9; %IT decay=100.0

[Additional information 1.](#)

Others: [1963Ha17](#), [1970Ha32](#).

Data are combined from [1959Sc41](#) and [1977ScZU](#); sources from neutron capture by  $^{191}\text{Ir}$ ; measured I(K x ray), I(L x ray), E(ce), Ice (scin). Isomeric assignment based on parent-daughter relationship to  $^{192}\text{Ir}$ (73.829 d).

 $^{192}\text{Ir}$  Levels

| E(level)               | $J^\pi$ <sup>‡</sup>            | $T_{1/2}$   | Comments   |
|------------------------|---------------------------------|-------------|--|
| 0.0                    | 4 <sup>+</sup>                  | 73.829 d 11 |  |
| 12.984? 14             | (6 <sup>+</sup> )               |             | E(level): from Adopted Levels.   |
| 168.14 <sup>†</sup> 12 | (11 <sup>-</sup> ) <sup>†</sup> | 241 y 9     | %IT=100<br>$T_{1/2}$ : from <a href="#">1970Ha32</a> . Others: <a href="#">1959Sc41</a> (>5 y), <a href="#">1963Ha17</a> . |

<sup>†</sup> [1959Sc41](#) conclude that the 241 y isomer's IT either feeds the g.s. or is followed by radiation(s) with  $E_\gamma < 30$  keV. The tentative 6<sup>+</sup> 12.98-keV and 6- 16.05-keV states (see Adopted Levels) would not have been detected by [1959Sc41](#); the former would suggest  $J^\pi=11^-$  for the isomer, analogous to that for the  $^{190}\text{Ir}$  high-spin isomer. Also, Nilsson model calculations ([1997BaZV](#)) predict low-lying 11<sup>-</sup> and 10<sup>+</sup> states. The latter state and a low-lying 9<sup>+</sup> state predicted by interacting-boson fermion-fermion calculations ([1991Ke10](#)), however, do not appear to be compatible with an E5 isomeric transition.

<sup>‡</sup> From Adopted Levels.

 $\gamma(^{192}\text{Ir})$ 

I( $\gamma$ +ce) normalization: from  $\Sigma$  (I( $\gamma$ +ce) to g.s.)=100%; No g.s. branch expected ( $\Delta J=7$ ).

| $E_\gamma$ | $E_i$ (level) | $J_i^\pi$          | $E_f$   | $J_f^\pi$         | Mult.             | $\alpha^\#$               | $I_{(\gamma+ce)}^\ddagger$ | Comments  |
|------------|---------------|--------------------|---------|-------------------|-------------------|---------------------------|----------------------------|---|
| (12.984)   | 12.984?       | (6 <sup>+</sup> )  | 0.0     | 4 <sup>+</sup>    | [E2]              | $\approx 5.7 \times 10^4$ | 100                        | ce(L)/( $\gamma$ +ce)=0.637; ce(M)/( $\gamma$ +ce)=0.286<br>$E_\gamma$ : from level energy difference; no radiation observed.   |
| 155.16 12  | 168.14        | (11 <sup>-</sup> ) | 12.984? | (6 <sup>+</sup> ) | (E5) <sup>†</sup> | 1085                      | 100                        | ce(K)/( $\gamma$ +ce)=0.00642 14; ce(L)/( $\gamma$ +ce)=0.695 9;<br>ce(M)/( $\gamma$ +ce)=0.232 5; ce(N+)/( $\gamma$ +ce)=0.0663 14<br>ce(N)/( $\gamma$ +ce)=0.0580 12; ce(O)/( $\gamma$ +ce)=0.00832 18; ce(P)/( $\gamma$ +ce)= $2.60 \times 10^{-5}$ 6<br>$\alpha(\text{exp})=1000$ 100 ( <a href="#">1977ScZU</a> )<br>$E_\gamma$ : from <a href="#">1977ScZU</a> . Other value: 161 keV 5 ( <a href="#">1959Sc41</a> ).<br>$\alpha$ : Other $\alpha$ (E5 theory): 1106 8 (private communication from K. Alder to authors of <a href="#">1977ScZU</a> ). |

<sup>†</sup> From  $\alpha(\text{K})\text{exp}$ . Also, [I( $\gamma$ (K x ray)/I( $\gamma(^{192}\text{Pt}$  316 $\gamma$ ) for  $^{192}\text{Ir}$  (241 y)]/ [I( $\gamma$ (K x ray)/I( $\gamma(^{192}\text{Pt}$  316 $\gamma$ ) for  $^{192}\text{Ir}$  (73.829 d)] $\approx 1$  ([1959Sc41](#)) and [I( $\gamma$ (L x ray)/I( $\gamma(^{192}\text{Pt}$  316 $\gamma$ ) for  $^{192}\text{Ir}$  (241 y)]/ [I( $\gamma$ (L x ray)/I( $\gamma(^{192}\text{Pt}$  316 $\gamma$ ) for  $^{192}\text{Ir}$  (73.829 d)] $\approx 16$  ([1959Sc41](#)); therefore, the 155 transition is mainly converted in the L shell, as is typical for high electric multipolarity.

<sup>‡</sup> Absolute intensity per 100 decays.

<sup>#</sup> Total theoretical internal conversion coefficients, calculated using the BrIcc code ([2008Ki07](#)) with Frozen orbital approximation based on  $\gamma$ -ray energies, assigned multiplicities, and mixing ratios, unless otherwise specified.

**$^{192}\text{Ir}$  IT decay (241 y)    1959Sc41,1977ScZU**

Legend

Decay Scheme

%IT=100.0

-----►  $\gamma$  Decay (Uncertain)

