

²⁰⁸Ra IT decay 1999Co13,2005Re02

| Type | Author | History Citation | Literature Cutoff Date |
|-----------------|--------------|---------------------|------------------------|
| Full Evaluation | M. J. Martin | NDS 108,1583 (2007) | 1-Jun-2007 |

Parent: ²⁰⁸Ra: E≥2147.4; %IT decay=?

1999Co13 ¹⁷²Yb(⁴⁰Ar,4nγ) E=183 MeV.

2005Re02 ¹⁸²W(³⁰Si,4nγ) E=151 MeV. See also 2005Re23.

The E_γ and I_γ data are from a private communication to the evaluator from R. Julin on behalf of the jurosphere collaboration (1999Co13). The publication contains E(level) values only in graphical form, and T_{1/2}(2147 level) is given with no uncertainty. Data of 2005Re02 are given in comments. They are consistent with data of 1999Co13. In addition to the transitions given here, 2005Re02 report several weak transitions whose assignments cannot be established.

²⁰⁸Ra Levels

| E(level) [†] | J ^π [‡] | T _{1/2} | Comments |
|-----------------------|-----------------------------|------------------|---|
| 0 | 0 ⁺ | | |
| 520.2 2 | (2 ⁺) | | |
| 1093.6 3 | (4 ⁺) | | |
| 1468.4 3 | (4 ⁺) | | |
| 1755.4 3 | (6 ⁺) | | |
| 2017.0 3 | (6 ⁺) | | |
| 2147.4 4 | (8 ⁺) | 263 ns 17 | T _{1/2} : weighted average of 270 ns 21 (1999Co13) and 250 ns 30 (2005Re02). |

[†] From a least-squares fit to the E_γ. Note, however, as pointed out by 2005Re02, that the relative order of the 548-948 cascade and the 573-662 cascade cannot be established on the basis of intensities. The levels shown are based on systematics of adjacent nuclides.

[‡] The J^π assignments are based on systematics of the Ra isotopes from A=206 to 214.

γ(²⁰⁸Ra)

| E _γ | I _γ [†] | E _i (level) | J _i ^π | E _f | J _f ^π | Mult. | α [‡] | I _(γ+ce) | Comments |
|----------------|-----------------------------|------------------------|-----------------------------|----------------|-----------------------------|-------|----------------|---------------------|--|
| 130.2 2 | 16.0 16 | 2147.4 | (8 ⁺) | 2017.0 | (6 ⁺) | [E2] | 3.19 | | E _γ ,I _γ : 2005Re02 report E _γ =130.2 5, I _γ =13 3. |
| 261.5 2 | 12.5 13 | 2017.0 | (6 ⁺) | 1755.4 | (6 ⁺) | | | 41 8 | E _γ ,I _γ : 2005Re02 report E _γ =262.0 5, I _γ =12 2. I _(γ+ce) : from an intensity balance at the 2017 level. Mult.: as pointed out by R. Julin, I(γ+ce) and I _γ for the 261.5γ leads to α=2.3 7 compared with α=0.237 and 1.09 for mult=E2 and M1, respectively, suggesting that the 261.5γ may have an E0 component. |
| 392.1 2 | 50 5 | 2147.4 | (8 ⁺) | 1755.4 | (6 ⁺) | [E2] | 0.0723 | | E _γ ,I _γ : 2005Re02 report E _γ =392.2 5, I _γ =43 7. |
| 520.2 2 | 100 | 520.2 | (2 ⁺) | 0 | 0 ⁺ | [E2] | 0.0356 | | E _γ : 2005Re02 report E _γ =519.9 5. |
| 548.6 2 | 25 3 | 2017.0 | (6 ⁺) | 1468.4 | (4 ⁺) | [E2] | 0.0314 | | E _γ ,I _γ : 2005Re02 report E _γ =548.1 5, I _γ =31 5. |
| 573.4 2 | 88 9 | 1093.6 | (4 ⁺) | 520.2 | (2 ⁺) | [E2] | 0.0284 | | E _γ ,I _γ : 2005Re02 report E _γ =573.2 5, I _γ =70 10. |
| 661.9 2 | 84 9 | 1755.4 | (6 ⁺) | 1093.6 | (4 ⁺) | [E2] | 0.0208 | | E _γ ,I _γ : 2005Re02 report E _γ =661.5 5, I _γ =69 9. |
| 948.1 2 | 20 2 | 1468.4 | (4 ⁺) | 520.2 | (2 ⁺) | [E2] | 0.0101 | | E _γ ,I _γ : 2005Re02 report E _γ =948.2 5, I _γ =27 4. |

Continued on next page (footnotes at end of table)

^{208}Ra IT decay 1999Co13,2005Re02 (continued) $\gamma(^{208}\text{Ra})$ (continued)

† Relative I_γ from a delayed $\gamma\gamma$ spectrum from the 263-ns state normalized so that $I_\gamma(520\gamma)=100$.

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

 ^{208}Ra IT decay 1999Co13,2005Re02Decay Scheme

Intensities: Relative $I_{(\gamma+ce)}$
%IT=?

Legend

- ▶ $I_\gamma < 2\% \times I_\gamma^{max}$
- ▶ $I_\gamma < 10\% \times I_\gamma^{max}$
- ▶ $I_\gamma > 10\% \times I_\gamma^{max}$

