## $^{61}$Co $\beta^-$ decay (1.649 h) 1969Ki09

History

| Type | Author | Citation | Literature Cutoff Date |
|---|---|---|---|
| Full Evaluation | Balraj Singh | ENSDF | 20-Jan-2020 |

Parent: $^{61}$Co: E=0.0; $J^\pi=7/2^-$; $T_{1/2}$=1.649 h *5*; Q($\beta^-$)=1323.8 *8*; %$\beta^-$ decay=100.0
$^{61}$Co-$J^\pi$,$T_{1/2}$: From $^{61}$Co Adopted Levels.
$^{61}$Co-Q($\beta^-$): From 2017Wa10.
1969Ki09: source produced in $^{61}$Ni(n,p) reaction and separated by a chemical method. Measured E$\gamma$, I$\gamma$, $\beta$.
Source produced by $^{64}$Ni(d,$\alpha$), $^{61}$Ni(n,p), $^{59}$Co(t,p) (see references in 1978LeZA compilation), and $^{58}$Fe($\alpha$,p) (1973Sc09).
Others: 1956Nu02, 1968Ka21, 1971VoZX, 1972GeZG.
From RADLIST code, deduced total decay energy is 1324 keV *5* agrees perfectly with 1323.8 keV *8* from Q($\beta^-$) value.

### $^{61}$Ni Levels

| E(level)[†] | $J^\pi$[‡] |
|---|---|
| 0.0 | $3/2^-$ |
| 67.412 *10* | $5/2^-$ |
| 917.5 *7* | $(7/2)^-$ |

† From least-squares fit to E$\gamma$ data.
‡ From Adopted Levels.

### $\beta^-$ radiations

| E(decay) | E(level) | I$\beta^-$[†‡] | Log *ft* | Comments |
|---|---|---|---|---|
| (406.3 *11*) | 917.5 | 4.4 *4* | 4.78 *4* | av E$\beta$=126.95 *39* |
| (1256.4 *8*) | 67.412 | 95.6 *4* | 5.240 *3* | av E$\beta$=475.03 *42*<br>Measured E$\beta$=1220 *40* (1956Nu02), 1220 *5* (1969Ki09). |

† $\beta^-$ branches are obtained from I($\gamma$+ce) imbalance at each level.
‡ Absolute intensity per 100 decays.

### $\gamma$($^{61}$Ni)

I$\gamma$ normalization: I($\gamma$+ce)(67.4$\gamma$+917.5$\gamma$)=100, assuming no $\beta^-$ feeding to g.s.

| E$_\gamma$ | I$_\gamma$[†#] | E$_i$(level) | $J^\pi_i$ | E$_f$ | $J^\pi_f$ | Mult.[‡] | $\delta$[‡] | $\alpha$[@] | Comments |
|---|---|---|---|---|---|---|---|---|---|
| 67.412 *10* | 96 | 67.412 | $5/2^-$ | 0.0 | $3/2^-$ | (M1+E2) | 0.0076 *5* | 0.137 | $\alpha$(K)=0.1225 *18*; $\alpha$(L)=0.01262 *18*; $\alpha$(M)=0.001778 *25*; $\alpha$(N)=7.38×10$^{-5}$ *11*<br>E$_\gamma$: from Adopted dataset. E$\gamma$=67.5 *5* (1972GeZG).<br>Additional information 1. |
| 850.0 *10* | 0.90 *8* | 917.5 | $(7/2)^-$ | 67.412 | $5/2^-$ | M1+E2 | +1.83 *20* | | |
| 917.5 *10* | 4.1 *3* | 917.5 | $(7/2)^-$ | 0.0 | $3/2^-$ | (E2) | | | |

† Relative intensity normalized to I$\gamma$(67.415$\gamma$)=96.
‡ From Adopted Gammas.

Continued on next page (footnotes at end of table)

## $^{61}$Co $\beta^-$ decay (1.649 h) 1969Ki09 (continued)

### $\gamma(^{61}Ni)$ (continued)

# For absolute intensity per 100 decays, multiply by 0.882 *4*.

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

## $^{61}$Co $\beta^-$ decay (1.649 h) 1969Ki09

### Decay Scheme

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays