

**⁶⁸Ge - Comments on evaluation
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This evaluation was completed in 1996, it was updated to include the most recent Q value evaluation in December 2011. The literature available by this date was included.

Decay Scheme

The first excited state in Ga-68 is at 175 keV. As can be seen from the Q value an energy of this amount is not available. Thus, the decay scheme of Ge-68 is complete.

Nuclear Data

The $Q^+ = 106,9$ (24) keV is from 2011AuZZ, which supersedes the value of 106 (6) keV (2003Au03).

The following values of the half-life of ⁶⁸Ge have been taken into account:

Reference	$T_{1/2}$ (d)	
H. H. Hopkins, Jr.	250	omitted
G. Rudstam	288 (6)	
B. Crasemann <i>et al.</i>	275 (20)	
Waters <i>et al.</i> 1981	270,82 (27)	
Schönfeld <i>et al.</i> 1994	270,99 (19)	
Adopted	270,95 (26)	χ^2 crit = 3,8 ; $\chi^2 = 2,8$

The set of four data is consistent, the weighted mean is adopted. Due to their large uncertainties, the values of Rudstam and Crasemann have practically no weight. The external uncertainty of 0,26 d is adopted, whereas the internal uncertainty is 0,15 d .

Electron Capture Transition

The energy is derived from the Q value. The fractional probabilities for EC are calculated using the "Tables for Calculation of Electron Capture" (E. Schönfeld, PTB-Laboratory report 6.33-95-2 (1995)). These values are based on wave functions of Mann and Waber (1973) with exchange and overlap corrections of Bahcall and Vatai; see W. Bambynek *et al.*, *Rev. Mod. Phys.* 49(1977)77.

Atomic Data

All these data are taken from E. Schönfeld and H. Janssen, *Nucl. Instr. and Methods in Phys. Res. A* 369(1996)527.

X Radiations

The energies are based on the wavelengths compiled by J. A. Bearden, *Rev. Mod. Phys.* 39(1967)78. The relative probabilities for K_{α} radiation are based on $P(K_{\beta})/P(K_{\alpha})$ and $P(K_{\alpha 2})/P(K_{\alpha 1})$ values as given in the paper of Schönfeld and Janßen (1994).

Auger Electrons

The energies of KLL and KLX Auger electrons are taken from the paper of F. P. Larkins, (Atomic Data and Nuclear Data Tables 20 (1977) 313).

The relative emission probabilities of K Auger electrons are taken from the paper of Schönfeld and Janßen (1994). The relative emission probabilities of L Auger electrons are derived from the corresponding absolute probabilities setting $P(\text{KLL}) = 100$.

Radiation Emissions**Electron Emissions**

The energies of the Auger electrons are the same as above. The emission intensities are calculated from the transition probability of the EC transition, the fractional electron capture probabilities and by using the atomic data given in sections above.

Photon Emissions

The X ray energies are the same as described above. The emission intensities are calculated from the transition probability of the EC transition, the fractional electron capture probabilities and by using the atomic data given in sections above.

Main Production Mode

Zn-66(α , 2n)Ge-68

References

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