^{198}Pt $2\beta^-$ decay 2011Be32

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Huang Xiaolong and Kang Mengxiao	NDS 133, 221 (2016)	1-Dec-2015

Parent: ^{198}Pt: E=0.0; $J^\pi=0^+$; $T_{1/2}\geq 3.5\times10^{18}$ y; $Q(2\beta^-)=1049.2$ *21*; $\%2\beta^-$ decay=?

^{198}Pt-$T_{1/2}$: Value given for double β^- decay to the 411.8 keV state of ^{198}Hg including both two-neutrino and neutrinoless processes based on a fitted peak of 13 counts *10*, which excludes 29 counts at 90% C.L.

2011Be32: Platinum sample=42.53 g total mass, consisting of two cups and a lid designed for chemistry purposes. With isotopic composition taken into account, the sample contained 1.84×10^{19} ^{190}Pt nuclei and 9.40×10^{21} ^{198}Pt nuclei. Experiment was performed at the Laboratori Nazionali del Gran Sasso of the INFN using an ultra-low background p-type HP Ge detector over 1815.4 h with the sample and 1045.6 h of background accumulation. Measured Eγ, Iγ. Deduced lower limit of $T_{1/2}$ for double beta decay processes. Noted contaminants which contributed peaks to the spectrum included: ^{192m}Ir, α decay of ^{190}Pt, ^{137}Cs, ^{40}K, ^{60}Co as well as the common nuclides from the ^{232}Th, ^{235}U and ^{238}U chains. The activities of all contaminants were less than 50 mBq/kg with the exception of ^{231}Pa, ^{238}U and ^{210}Pb which had activities less than 66, 68 and 34000 mBq/kg respectively. No peaks in the accumulated spectrum indicate double-β activity. Thus the lower limit was set at a 90% confidence level, calculated by the product of the number of nuclei with the detector efficiency, measuring time and lim S (the number of events which can be excluded).

^{198}Hg Levels

Only levels mentioned as possibly being populated by the double decay are shown here.

E(level)†	J^π†
0.0	0^+
411.8	2^+

† From Adopted Levels.

$\gamma(^{198}Hg)$

E_γ†	E_i(level)	J^π_i	E_f	J^π_f
411.8	411.8	2^+	0.0	0^+

† From Adopted Gammas.

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Decay Scheme