# $^{115}$In $\beta^-$ decay ($4.41\times10^{14}$ y) 2011An19,2009Wi10

| History | | | |
|---|---|---|---|
| Type | Author | Citation | Literature Cutoff Date |
| Full Evaluation | Jean Blachot | NDS 113, 2391 (2012) | 1-Sep-2012 |

Parent: $^{115}$In: E=0.0; $J^\pi=9/2^+$; $T_{1/2}=4.41\times10^{14}$ y *25*; $Q(\beta^-)=497.489$ *10*; $\%\beta^-$ decay=100.0

$^{115}$In-$J^\pi$,$T_{1/2}$: From Adopted Levels.

2011An19: measured partial half-life of the rare $\beta$ decay from $9/2^+$ parent to $3/2^+$ state at 497.334 keV by measuring intensity of $\gamma$ ray from this level at HADES underground laboratory using three HPGe detectors.

2009Wi10: measured Q value by JYFL Penning-trap spectrometer. Measured $\beta$ decay to $3/2^+$ level at 497.334 at HADES underground lab.

Q value for $\beta$ decay of $9/2^+$ parent to $3/2^+$ excited state in $^{115}$Sn is claimed to be the lowest value.

Precise mass measurements of $^{115}$In and $^{115}$Sn using Penning-trap method: 2009Mo23.

## $^{115}$Sn Levels

| E(level) | $J^\pi$ | $T_{1/2}$ |
|---|---|---|
| 0.0 | $1/2^+$ | stable |
| 497.334 | $3/2^+$ | |

## $\beta^-$ radiations

| E(decay) | E(level) | $I\beta^-$ † | Log *ft* | Comments |
|---|---|---|---|---|
| (0.155 *10*) | 497.334 | 0.000102 *13* | 17.8 *2* | av $E\beta$=0.039 *6*<br>$I\beta^-$: from 2011An19. Earlier value=0.000107 *17* (2009Wi10). Other: 0.00012 *3* (2005Ca03,2007Ca05).<br>Q value of 0.35 keV *17* deduced for the decay from $9/2^+$ parent state to $3/2^+$ state at 497.334 keV (2009Wi10) is claimed to be the lowest value in literature. Using 2011AuZZ masses, this Q value=0.155 keV *24*. |
| (497.489 *10*) | 0.0 | 100 | 22.53 *3* | av $E\beta$=153.204 *61*<br>E(decay): endpoint $E(\beta^-)$=482 *15* (1978Pf01,1979Pf01), 495 *20* (1972Mu02), 480 *30* (1962Wa15), 625 *70* (1961Be15), 630 *30* (1950Ma76).<br>Fourth-forbidden nonunique $\beta$ transition; for $\beta$ spectrum shape and F-K analysis, see 1979Pf01. |

† Absolute intensity per 100 decays.

## $\gamma(^{115}Sn)$

| $E_\gamma$ | $I_\gamma$ | $E_i$(level) | $J_i^\pi$ | $E_f$ | $J_f^\pi$ | Comments |
|---|---|---|---|---|---|---|
| 497.3 | $1.02\times10^{-4}$ *13* | 497.334 | $3/2^+$ | 0.0 | $1/2^+$ | $I_\gamma$: from 2011An19. See also 2009Wi10, 2007Ca05 and 2005Ca03 for for evidence of decay of $9/2^+$ parent state to $3/2^+$ excited state at 497.3 keV. |

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### Decay Scheme

Intensities: Type not specified