

$^{109}\text{Zr } \beta^- \text{ decay}$     [2011Wa03](#),[2011Ni01](#),[2015Lo04](#)

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	S. Kumar(a), J. Chen(b) and F. G. Kondev		NDS 137, 1 (2016)	31-May-2016

Parent:  $^{109}\text{Zr}$ :  $E=0.0$ ;  $J^\pi=(5/2^+)$ ;  $T_{1/2}=56 \text{ ms}$  3;  $Q(\beta^-)=10427 \text{ SY}$ ;  $\% \beta^- \text{ decay}=100.0$

$^{109}\text{Zr}-Q(\beta^-)$ : From [2012Wa38](#),  $\Delta Q(\beta^-)=727$ .

[2011Wa03](#):  $^{109}\text{Zr}$  was produced in  $\text{Be}(^{238}\text{U},\text{F})$  reactions at  $E=345 \text{ MeV/nucleon}$  at RIKEN. BigRIPS spectrometer was used to separate the recoiling nuclei, which were implanted into an active stopper consisting of 9 DSSDs, and surrounded by four Compton-suppressed Clover-type Ge detectors and one  $\text{LaBr}_3(\text{Ce})$  detector. Measured:  $\text{implant-}\gamma(t)$ ,  $\text{implant-}\beta(t)$  and  $\text{implant-}\beta\gamma(t)$ .

[2011Ni01](#):  $^{109}\text{Zr}$  was produced in  $\text{Be}(^{238}\text{U},\text{F})$  reactions at  $E=345 \text{ MeV/nucleon}$  at RIKEN. BigRIPS spectrometer was used to separate the recoiling nuclei, which were implanted into an active stopper consisting of 9 DSSDs. Measured:  $\text{implant-}\beta(t)$ . Deduced:  $^{109}\text{Zr}$  half-life using the maximum likelihood analysis technique.

[2015Lo04](#):  $^{109}\text{Zr}$  was produced in  $\text{Be}(^{238}\text{U},\text{F})$  reactions at  $E=345 \text{ MeV/nucleon}$  at RIKEN. BigRIPS spectrometer was used to separate the recoiling nuclei, which were implanted into an active stopper consisting of 8 DSSDs, and surrounded by 84  $\text{HpGe}$  detectors of the EURICA array. Measured:  $\text{implant-}\beta(t)$  and  $\text{implant-}\beta\gamma(t)$ . Deduced:  $^{109}\text{Zr}$  half-life.

 $^{109}\text{Nb}$  Levels

$E(\text{level})^\dagger$	$J^\pi^\ddagger$	$T_{1/2}^\ddagger$
0.0	$(5/2^+)$	108 ms 5
116.9 6	$(7/2^+)$	
313.1 5		132 ns 18

$^\dagger$  From a least-squared fit to  $E_\gamma$ .

$^\ddagger$  From Adopted Levels.

 $\gamma(^{109}\text{Nb})$ 

$E_\gamma^\dagger$	$E_i(\text{level})$	$J_i^\pi$	$E_f$	$J_f^\pi$
117 1	116.9	$(7/2^+)$	0.0	$(5/2^+)$
196.3 5	313.1		116.9	$(7/2^+)$
313.1 5	313.1		0.0	$(5/2^+)$

$^\dagger$  From  $^{109}\text{Zr } \beta^- \text{ decay}$  in [2011Wa03](#).  $\Delta E_\gamma$  were estimated by the evaluators.

---

 $^{109}\text{Zr} \beta^-$  decay 2011Wa03,2011Ni01,2015Lo04

---

Decay Scheme