^{85}Ga β^- decay (92 ms) 2013Ko31,2012Ma37,2010Wi03

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh and Jun Chen	NDS 116, 1 (2014)	31-Dec-2013

Parent: ^{85}Ga: E=0; J^π=(5/2$^-$); $T_{1/2}$=92 ms *4*; Q(β^-)=13060 *SY*; %β^- decay=100.0

^{85}Ga-J^π,$T_{1/2}$: From ^{85}Ga Adopted Levels.

^{85}Ga-Q(β^-): 13060 *300* (syst,2012Wa38).

^{85}Ga-%β^- decay: %β^-n >35% (2009Gr06).

2013Ko31: measured Eγ, Iγ, $\beta\gamma\gamma$-coin, $\beta\gamma$-coin at HRIBF. Level scheme of ^{85}Ge is proposed. See experimental details in 2012Ma37.

2012Ma37: ^{85}Ga produced in fission of U with 50 MeV proton beam. Target=6 g/cm^2 thick UC_x located at target ion source assembly mounted on the Injector for Radioactive Ion Species 2 (IRIS-2) at HRIBF facility at ORNL. Fission products were separated by electromagnetic system. Separated ions were transmitted to Low energy Radioactive Ion beam Spectroscopy Station (LeRIBSS). Ions at 200 keV energy were deposited on a tape in the Moving Tape Collector located in the middle of β-γ counting system consisting of four Ge Clovers and two plastic scintillators. Measured β-gated γ spectra and half-lives. Half-life of isotope was measured by fitting the growth and decay curves of γ rays assigned to β-γ or $\beta\gamma$-neutron channels after subtraction of background. Comparison with theoretical calculations using density functional model. Gamma ray assigned to β^-n decay of ^{85}Ga to ^{84}Ge: 624.3 keV. A γ ray at 107.8 keV is assigned to decay of ^{85}Ga (2012Ma37).

2010Wi03: ^{85}Ga from ^{238}U(p,F),E=54 MeV; products were accelerated to 225 MeV in the ORNL Tandem. Measured Eγ, Iγ, $\gamma\gamma$, (fragment)γ coin (ion-tagged γ-ray spectra), $\beta\gamma$(ion) coin, βnγ coin using an array composed of four Ge clover and two plastic scintillator detectors. Ion-tagging technique for assignment of γ rays to the decay of ^{85}Ga. Comparison with spherical HFB calculations. See also 2009Gr06 and 2008WiZS (conference articles) from the same group.

^{85}Ge Levels

E(level)†	J^π‡	$T_{1/2}$	Comments
0.0	(3/2$^+$,5/2$^+$)	503 ms *18*	$T_{1/2}$: from Adopted Levels.
107.2 *1*	(5/2$^+$,3/2$^+$)		
472.1 *1*	(3/2$^+$)		
703.1 *1*			
895.2 *1*			
903.2? *1*			
2348.2 *1*			

† From least-squares fit to Eγ data.

‡ From shell-model predictions (2013Ko31) and Adopted Levels.

γ(^{85}Ge)

A tentative 321γ reported in 2010Wi03 is not confirmed by 2013Ko31.

Available data are inadequate to obtain normalization factor to deduce Iγ/100 decays.

E$_\gamma$†	I$_\gamma$†	E$_i$(level)	J_i^π	E$_f$	J_f^π	Comments
107.2 *1*	30.3 *68*	107.2	(5/2$^+$,3/2$^+$)	0.0	(3/2$^+$,5/2$^+$)	
364.9 *1*	3.71 *77*	472.1	(3/2$^+$)	107.2	(5/2$^+$,3/2$^+$)	
472.1 *1*	2.05 *23*	472.1	(3/2$^+$)	0.0	(3/2$^+$,5/2$^+$)	
595.9 *1*	3.7 *12*	703.1		107.2	(5/2$^+$,3/2$^+$)	
703.1 *1*	1.26 *45*	703.1		0.0	(3/2$^+$,5/2$^+$)	
788.0 *1*	2.26 *61*	895.2		107.2	(5/2$^+$,3/2$^+$)	
796.0‡ *1*	0.41 *12*	903.2?		107.2	(5/2$^+$,3/2$^+$)	E$_\gamma$: from table I in 2013Ko31; listed as 795.0 in authors' figure 3.
2241.0 *1*	3.4 *12*	2348.2		107.2	(5/2$^+$,3/2$^+$)	

Continued on next page (footnotes at end of table)

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$\gamma(^{85}Ge)$ (continued)

† From 2013Ko31. Intensities are normalized to 100 for 623.9γ in ^{84}Ge from β^-n decay of ^{85}Ga.
‡ Placement of transition in the level scheme is uncertain.

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