^{9}Be(^{64}Ni,Xγ) 2007Ve05,2004Ma80

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Kazimierz Zuber, Balraj Singh	NDS 125, 1 (2015)	25-Jan-2015

2007Ve05: ^{61}Fe isomer populated and aligned following the fragmentation of a 64.6 MeV/nucleon ^{64}Ni beam from GANIL accelerator impinging on a 94.1 mg/cm^2 ^{9}Be target. Fully stripped fragments selected by the LISE fragment separator and implanted in a CD single crystal. Measured spectroscopic quadrupole moment of the 9/2$^+$ isomer by ion-implantation TDPAD method and four Ge detectors at angles of −24°, −114°, 145° and 66° relative to the secondary beam.

2004Ma80: E=54.7 MeV/nucleon ^{64}Ni beam from GANIL accelerator. Fragmentation process used to produce ^{61}Fe nuclei which were separated using the LISE fragment separator and implanted in a Cu host. Measured half-life and g factor of the 9/2$^+$ isomer by time-dependent perturbed angular distribution TDPAD method and four Ge detectors at angles −45°, −135°, 45°, 135° relative to the secondary beam.

1998Gr14: E=60.3 MeV/nucleon beam of ^{86}Kr from GANIL accelerator using SISSI production target device coupled to the system of the Alpha and LISE3 spectrometers. ^{86}Kr with intensity of 15 pnA impinged on a rotating natural Ni target 100 μm thick. Measured Eγ, Iγ and half-life using standard TOF technique.

2015Wi02: measured half-life of the 861, 9/2$^+$ isomer using a new technique of identifying nanosecond isomers produced in secondary reactions with intermediate beam-energy radioactive ions beams at NSCL-MSU facility using S-800 spectrograph for reaction products, GRETINA array for prompt γ rays and CsI(Na) array for delayed transitions. Measured ^{61}Fe ions)γ(t).

Additional information 1.

^{61}Fe Levels

Count-rate ratio R(θ) functions of the 654 keV and 207 keV γ-rays exhibit an opposite phase. This is due to the different multipolarities for the two transitions. The ratio between amplitudes of the two R(θ) functions is −1.43 *16*, using GEANT simulations assuming that the 654 keV and 207 keV transition have pure M2 and M1 multipolarities estimated this ratio to be −1.30 *6*. The good agreement between the two ratio indicates level sequence in ^{61}Fe is indeed 3/2−(g.s.), 5/2$^-$ and 9/2$^+$ (2004Ma80).

E(level)	J$^\pi$[†]	T$_{1/2}$	Comments
0	3/2$^-$		
207	5/2$^-$		
861	9/2$^+$	238 ns *5*	μ=−1.03 *2* from measured g factor=−0.229 *2* (2004Ma80). Q=0.41 *6* (2007Ve05), derived relative to the quadrupole moment of the ^{57}Fe (3/2$^-$,98 ns) isomer, Q(9/2$^+$ isomer in ^{61}Fe)/Q(3/2$^-$ isomer in ^{57}Fe)=2.75 *13* and Q(98-ns, 3/2$^-$ in ^{57}Fe)=+0.15 *2*. With this value, obtain Q(^{61}Fe,9/2$^+$)=0.41 *6*. The sign of Q is not determined. T$_{1/2}$: weighted average of 239 ns *5* from $\gamma\gamma$(t) (2004Ma80,2002MaZN); and 237 ns *6* from (^{61}Fe)γ(t) (2015Wi02). Other: 250 NS *10* (1998Gr14).

[†] From 2004Ma80.

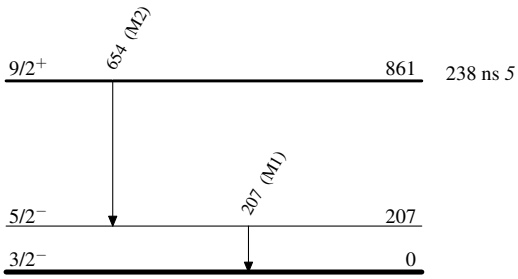
γ(^{61}Fe)

E$_\gamma$	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	Mult.[†]
207	207	5/2$^-$	0	3/2$^-$	(M1)
654	861	9/2$^+$	207	5/2$^-$	(M2)

[†] From 2004Ma80.

^{9}Be(^{64}Ni,Xγ) 2007Ve05,2004Ma80

Level Scheme



$^{61}_{26}Fe_{35}$