^{9}Be(^{238}U,Xγ) 2012Go19

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	ENSDF	19-Feb-2015

2012Go09: E(^{238}U)=1 GeV/nucleon beam from UNILAC-SIS accelerator system at GSI. Target=2.5 g/cm^2 thick ^{9}Be. ^{216}Pb ions produced fragmentation reaction were identified and separated based on magnetic rigidities using double-stage magnetic spectrometer fragment separator (FRS). Identification in mass/charge ratio was achieved through time-of-flight and focal plane position sensitive measurements using double-sided silicon-strip detectors (DSSSDs). The gamma rays in coincidence mode were detected by RISING γ-spectrometer of 105 Ge crystals. Measured Eγ, level half-life by γ(t). Deduced levels, J, π, B(E2). Comparison with shell-model calculations with the introduction of effective three-body interaction.

^{216}Pb Levels

E(level)[†]	J$^\pi$	T$_{1/2}$	Comments
0[‡]	0$^+$		
887[‡] *1*	(2$^+$)		
1289[‡] *2*	(4$^+$)		
1459[‡] *2*	(6$^+$)		
1459+x?[‡]	(8$^+$)	0.40 μs *4*	%IT=100 E(level): x=20-90 keV. T$_{1/2}$: from γ(t) decay curves (2012Go19).

[†] From Eγ values, assuming 1 keV uncertainty for each γ ray.
[‡] Band(A): Yrast cascade.

γ(^{216}Pb)

E$_\gamma$	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	Mult.	α[†]	Comments
x	1459+x?	(8$^+$)	1459	(6$^+$)	[E2]		B(E2)(W.u.)=0.36 *+3−8* B(E2)=0.00276 *+26−58*. 2012Go19 give B(E2)=0.0026 *4* (numerical value received from A. Gottardo in e-mail reply of Feb 19, 2015). E$_\gamma$: transition to (6$^+$) level not seen in γ-ray spectra, energy is estimated as x=20-90 keV (2012Go19) based on the observed intensity of x rays and that expected from large internal conversion of a low-energy E2 transition. Total conversion coefficient=9.98 for 90-keV, 100.9 for 55-keV and 14630 for 20-keV, E2 transitions. B(E2) and B(E2)(W.u.) deduced by evaluator for Eγ=55 keV with the uncertainties overlapping the values B(E2)=0.00218 *22*, B(E2)(W.u.)=0.28 *3* for 90-keV transition, and B(E2)=0.00302 *31*, B(E2)(W.u.)=0.39 *4* for 20-keV transition.
170	1459	(6$^+$)	1289	(4$^+$)	[E2]	0.765 *20*	α: from BrIcc code assuming 1 keV uncertainty in energy.
402	1289	(4$^+$)	887	(2$^+$)			
887	887	(2$^+$)	0	0$^+$			

[†] Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.

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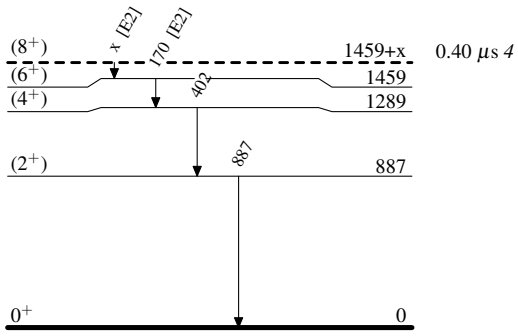
Level Scheme



$^{216}_{82}Pb_{134}$

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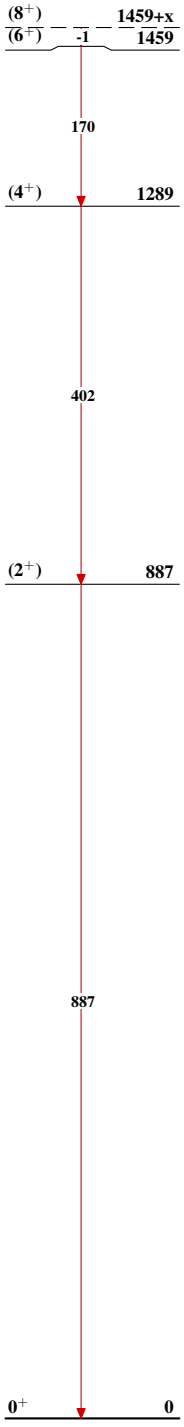
Band(A): Yrast cascade



$^{216}_{82}Pb_{134}$