

$^9\text{Be}(^{238}\text{U},\text{X}\gamma)$ 2019Go10

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	M. S. Basunia	NDS 181, 475 (2022)	1-Jan-2022

Adapted/Edited the XUNDL dataset compiled by B. Singh (McMaster), Feb 01, 2020.

2019Go10: projectile fragmentation of 1 GeV ^{238}U beam from the UNILAC-SIS18 accelerator facilities at GSI with an intensity of 1.5×10^9 ions/spill. Target was 2.5 mg/cm² thick ^9Be , followed by a 223 mg/cm² Nb stripper foil. The reaction products were separated and identified in the magnetic spectrometer Fragment Separator (FRS), based on B ρ - ΔE -B ρ scheme. Implanted in a composite DSSSD detector system consists of three layers. The DSSSD detectors were surrounded by the RISING γ -ray spectrometer consists of 105 HPGe crystals arranged in clusters of seven elements. Measured E γ , I γ , delayed γ in coincidence with implanted recoils, $\gamma\gamma$ -coin. Deduced isomeric activity and measured half-life. Shell-model calculations.

Experimental level structure of ^{213}Tl seems different from that of ^{209}Tl and ^{211}Tl , as described by 2019Go10, making it difficult to assign the two observed γ rays of 380 and 698 keV, although, shell-model calculations by 2019Go10 for all the three nuclei give similar level pattern.

 ^{213}Tl Levels

2019Go10 observed two transitions, which are not in coincidence with each other and have half-lives which are incompatible within errors. This suggests two isomeric levels, however their placement in the level scheme could not be determined.

E(level)	J π	T _{1/2}	Comments
0	(1/2 ⁺)		J π : From shell-model calculations (2019Go10). Configuration: π ($s_{1/2}^{-1}$).
0+x?			
0+y?			
380+x?		4.1 μs 5	T _{1/2} : from 380 γ (t) (2019Go10). Uncertainty includes statistical and systematic.
698+y?		0.6 μs 3	T _{1/2} : from 698 γ (t) (2019Go10). Uncertainty includes statistical and systematic.

 $\gamma(^{213}\text{Tl})$

E γ	E _i (level)	E _f	I _(γ+ce)	Comments
380 [†] 1	380+x?	0+x?	91 [‡] 11	2019Go10 reported I(γ +ce)=26 5 per 100 ions of ^{213}Tl .
698 [†] 1	698+y?	0+y?	17 [‡] 5	2019Go10 reported I(γ +ce)=7 3 per 100 ions of ^{213}Tl .

[†] 698 γ and 380 γ were not in coincidence.

[‡] Corrected measured peak area for efficiency and electron conversion (assuming E2).

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Level Scheme

