^{9}Be(^{109}Tc,xγ) 2017Ra05

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh and Jun Chen	NDS 172,1 (2021)	31-Jan-2021

Includes ^{9}Be(^{108}Mo,Xγ).

2017Ra05: E(^{109}Tc or ^{108}Mo)=150 MeV/nucleon produced in ^{9}Be(^{238}U,F),E=600 MeV/nucleon reaction at the UNILAC and SIS-18 accelerators at GSI. Primary target=1033 mg/cm^2 thick. Fragments were separated using FRS separator. The fission products bombarded a secondary ^{9}Be target of ≈700 mg/cm^2 thickness. The fragments produced in the second-stage fragmentation were identified using the Lund-York-Cologne calorimeter (LYCCA). The γ rays from the secondary ^{100}Mo fragments were detected using AGATA Ge detector array and HECTOR+ scintillation detector array for high−energies. Measured Eγ, Iγ, (fragment)γ-coin, level half-lives by a relativistic version of the Doppler-shift-attenuation method. Deduced levels, half-lives for yrast levels and transition quadrupole moments. Comparison with beyond mean-field calculations using Gogny D1S functional.

^{100}Mo Levels

E(level)	J$^\pi$	T$_{1/2}$ †	Comments
0.0	0$^+$		
535.6	2$^+$	10.3 ps *+51−35*	T$_{1/2}$: mean lifetime τ=14.8 ps *+73−50* (statistical uncertainties of +6.1−4.1 ps and systematic uncertainties of +4.0−2.8 ps combined in quadrature). Transition quadrupole moment Q$_t$=2.5 *4* (2017Ra05).
1136.1	4$^+$	4.9 ps *+19−14*	T$_{1/2}$: mean lifetime τ=7.0 ps *+27−20* (statistical uncertainties of +2.5−1.8 ps and systematic uncertainties of +0.9−0.7 ps combined in quadrature). Transition quadrupole moment Q$_t$=2.3 *+4−3* (2017Ra05).

† From 2017Ra05, using relativistic Doppler-shift-attenuation method.

γ(^{100}Mo)

E$_\gamma$ †	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$
535.6	535.6	2$^+$	0.0	0$^+$
600.5	1136.1	4$^+$	535.6	2$^+$

† Rounded values from ^{100}Mo Adopted dataset.

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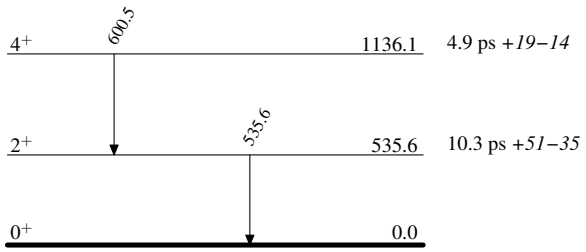
Level Scheme



$^{100}_{42}Mo_{58}$