^{9}Be(^{208}Pb,Xγ) 2005Ca02,2011St21

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Jun Chen and Balraj Singh	NDS 177, 1 (2021)	3-Sep-2021

2005Ca02: Projectile fragmentation of ^{208}Pb beam at 1 GeV/nucleon. Fragment Recoil separator (FRS) used to identify ^{194}Re nuclide. Measured Eγ, Iγ, and $\gamma\gamma$, $\gamma\gamma$(t) using four 'Clover' type Ge detectors (providing 16 independent Ge crystals). The experimental setup also included two multi-wire proportional counters for position measurements; two scintillation detectors providing time-of-flight and position information; and additional two scintillators and an ionization chamber (MUSIC) for energy loss measurements.

2011St21: ^{194}Re nuclide formed by in-flight fragmentation of ^{208}Pb beam at 1 GeV/nucleon from the GSI UNILAC and SIS-18 accelerator complex. Target thickness=2.526 g/cm^2, backed by ^{93}Nb foil of thickness=0.223 g/cm^2. Fragments identified in flight by the Fragment Separator (FRS) operated in achromatic mode based on time of flight, Bρ and energy loss. Transmitted ions slowed in Al degraders and stopped in a plastic catcher. The stopper was surrounded by the RISING γ-ray spectrometer. Measured Eγ, Iγ, delayed γ rays, isomer lifetime. Beam was fully-stripped or mixture of H- or He-like nuclei.

^{194}Re Levels

E(level)	$T_{1/2}$	Comments
x	45 μs *18*	%IT≈100 E(level): it is possible there are two different isomers, the one reported by 2005Ca02 decaying by γ rays of 128, 148 and 464 keV in the delayed γ-ray spectrum; and the other by 2011St21 decaying by only the 86.3-keV γ ray. $T_{1/2}$: from decay curve of delayed Re x rays and γ ray (2011St21). Other: 1 to 75 μs (2005Ca02), counting statistics did not permit the quantitative determination of decay half-lives. However, the recording time ranges provide constraints on the isomer half-life.

γ(^{194}Re)

E$_\gamma$	I$_\gamma$	E$_i$(level)
^{x}86.3‡ *5*	100‡ *25*	
^{x}128†		
^{x}148†		
^{x}464†		

† Delayed γ ray from the isomer in figure 16 of 2005Ca02, not assigned in a level scheme.

‡ From Table I of 2011St21. Uncertainty of 0.5 keV assigned in consultation with Zs. Podolyak. This γ deexcites 45−μs isomer.

^{x} γ ray not placed in level scheme.