

$^9\text{Be}(^{208}\text{Pb},\text{X}\gamma)$ 2005Ca02

Type	Author	History	Citation	Literature Cutoff Date
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2005Ca02: $^9\text{Be}(^{208}\text{Pb},\text{x}\gamma)$, E=1 GeV/nucleon. Fragment Recoil separator (FRS) used to identify ^{195}Os nuclide.

Measured E_γ , I_γ , 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 a further two scintillators and an ionization chamber (MUSIC) for energy loss measurements. For each Ge crystal, the energy and time of the first γ -ray event was recorded after the arrival of a heavy ion, up to a maximum time of 75 μs .

 ^{195}Os Levels

E(level) ^{†‡}	$T_{1/2}$	Comments
0.0		
438.6? 2		
931.6? 3		
1464.7? 4	26 ns 4	$T_{1/2}$: The value given for the half-life of this isomer is for ions of ^{195}Os at rest, measured at the final focus of the FRS. The half-life was determined by fitting the time dependence of the γ -ray intensity with a convolution of Gaussian and exponential functions.

[†] The 439, 493, and 533 transitions are suggested by 2005Ca02 to be in a collective cascade because they have similar intensities and are spaced at regular intervals, but the 714 transition is thought to originate from a different intrinsic structure.

[‡] The ordering of the 439-493-533 cascade does not seem to be established, thus the level energies are uncertain.

 $\gamma(^{195}\text{Os})$

E_γ [†]	I_γ [‡]	$E_i(\text{level})$	E_f	Comments
438.6 2	365 53	438.6?	0.0	
493.0 2	266 44	931.6?	438.6?	
533.1 2	355 59	1464.7?	931.6?	$\alpha(\text{exp}) \geq 1.6$.
^x 714.0 3	364 59			E_γ : 2005Ca02 contends that this transition cannot directly de-excite the 26 ns isomer because, due to its high energy, its conversion coefficient would be small and, correspondingly, the in-flight half-life would be too short to permit the survival of the isomer through the FRS.

[†] Because the isomer half-life is short, it was not possible for 2005Ca02 to separate completely the isomeric γ -rays from the low-energy (bremsstrahlung) background in the spectrum, precluding the possibility of identifying any x-rays or γ -ray transitions below about 300 keV.

[‡] Relative γ -ray intensity measured during the 75 μs recording interval.

^x γ ray not placed in level scheme.

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Level Scheme

Intensities: Relative I_γ

Legend

- \longrightarrow $I_\gamma < 2\% \times I_\gamma^{\max}$
- \longrightarrow $I_\gamma < 10\% \times I_\gamma^{\max}$
- \longrightarrow $I_\gamma > 10\% \times I_\gamma^{\max}$

