

$^9\text{Be}(^{18}\text{C}, ^{17}\text{C}\gamma)$:RIKEN 2008Su12

Type	Author	Citation	History	Literature Cutoff Date
Full Evaluation	J. H. Kelley, G. C. Sheu	ENSDF		01-May-2017

2008Su12:

XUNDL set compiled by F.G. Kondev, ANL, August 2008.

The experiment was performed at the RIKEN Accelerator Research Facility using a ^{18}C secondary beam from the RIKEN Projectile-fragment Separator (RIPS). The secondary beam was produced by fragmenting 110 MeV/nucleon ^{22}Ne ions on a 1.02 g/cm 2 ^9Be production target with a typical beam intensity of 320 pA. Particle identification of the ^{18}C beam was performed on an event-by-event basis by means of the ToF- ΔE method using two 1.0 mm thick plastic scintillation counters, placed 5.1 m apart along the beam line. The ^{18}C secondary beam had a typical intensity of 2.3×10^4 counts per second with a purity of about 60%, and was directed onto a 370 mg/cm 2 ^9Be reaction target set at the final focal plane of RIPS. Positions and incident angles of the secondary beam particles were recorded with two sets of parallel plate avalanche counters (PPACs) placed upstream of the reaction target. Outgoing particles were detected by a plastic scintillator hodoscope, located 3.8 m downstream of the target. The scattering angle of the particle was determined by combining the hit position on the hodoscope with those on the PPACs for the incoming particles.

Detectors: 130 NaI(Tl) detectors from the DALI and DALI2 arrays, divided into ten separate layers, surrounded the target to detect deexciting γ rays.

Measured: E_γ , $\gamma(\theta)$ and $T_{1/2}$. The lifetime measurements were performed by employing the recoil shadow method with intermediate-energy radioactive-isotope beams. In this method, the lifetime is obtained by observing the angular distribution of γ rays emitted from excited ^{17}C nuclei in flight.

 ^{17}C Levels

E(level) [†]	J^π [‡]	$T_{1/2}$ [#]	Comments
0 [@]	$3/2^+$		
212 8	$(1/2^+)$	404 ps 15	$T_{1/2}$: the quoted uncertainty is statistical. The systematics uncertainty is 24 ps (2008Su12). E(level): configuration= $\nu_{1/2}[211]$ with less mixing from the $\nu_{1/2}[220]$ ($1d_{5/2}$) and $\nu_{1/2}[200]$ ($1d_{3/2}$) orbitals.
333 [@] 10	$(5/2^+)$	13.1 ps 4	$T_{1/2}$: the quoted uncertainty is statistical. The systematics uncertainty is 3.3 ps (2008Su12).

[†] From the measured E_γ .

[‡] Based on deduced transition strengths; shell model.

[#] Recoil shadow method (2008Su12). Uncertainties are statistical. The systematic uncertainties are given under comments.

[@] Band(A): $\nu_{3/2}[211]$ band.

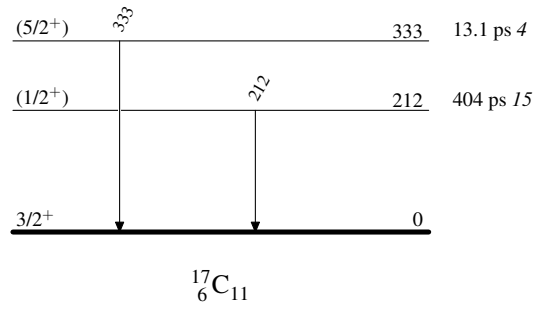
 $\gamma(^{17}\text{C})$

E_γ [†]	$E_i(\text{level})$	J_i^π	E_f	J_f^π
212 8	212	$(1/2^+)$	0	$3/2^+$
333 10	333	$(5/2^+)$	0	$3/2^+$

[†] Values deduced after correcting for Doppler effect.

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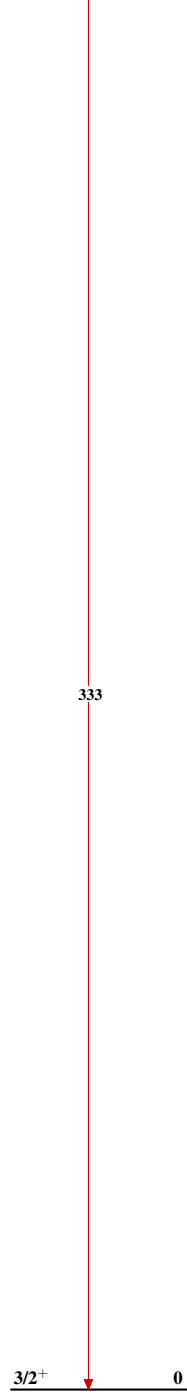
Level Scheme



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**Band(A): $\nu_{3/2}[211]$
band**

$(5/2^+)$ 333



$^{17}\text{C}_{11}$