

$\text{C}(^{36}\text{Mg}, ^{35}\text{Na}\gamma)$  2014Do05

**2014Do05:** A 345-MeV/nucleon  $^{48}\text{Ca}$  primary beam was accelerated by the superconducting ring cyclotron (SRC) at RIKEN. A-236-MeV/nucleon  $^{36}\text{Mg}$  secondary beam was produced by the fragmentation of  $^{48}\text{Ca}$  on a Be target and separated by the BigRIPS separator using the  $\text{B}\rho$ - $\Delta\text{E}$ - $\text{B}\rho$  method. The secondary reaction targets were 2.54 g/cm<sup>2</sup> thick carbon and 2.13 g/cm<sup>2</sup> thick CH<sub>2</sub> polyethylene. The secondary reaction products were identified by the magnetic spectrometer ZeroDegree using the  $\text{B}\rho$ - $\Delta\text{E}$ - $\text{B}\rho$  method.  $\gamma$  rays in coincidence with  $^{35}\text{Na}$  were detected using the DALI2 array of 186 large NaI(Tl) detectors. Measured  $E_\gamma$  with Doppler correction,  $I_\gamma$ , and  $\gamma\gamma$ -coin. Deduced levels, J,  $\pi$ , and bands. Compared with shell-model calculations using the SPDF-M effective interaction.

 $^{35}\text{Na}$  Levels

<u>E(level)<sup>†</sup></u>	<u>J<math>\pi</math><sup>‡</sup></u>
0 <sup>#</sup>	(3/2 <sup>+</sup> )
373 <sup>#</sup> 5	(5/2 <sup>+</sup> )
1014 <sup>#</sup> 17	(7/2 <sup>+</sup> )

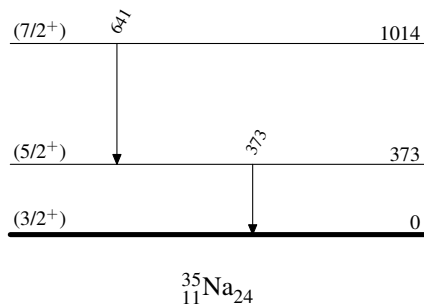
<sup>†</sup> From a least-squares fit to  $\gamma$ -ray energies.

<sup>‡</sup> From shell-model calculations.

<sup>#</sup> Band(A):  $K^\pi=(3/2^+)$  rotational band predicted by the shell model.

 $\gamma(^{35}\text{Na})$ 

<u><math>E_\gamma</math></u>	<u><math>E_i(\text{level})</math></u>	<u><math>J_i^\pi</math></u>	<u><math>E_f</math></u>	<u><math>J_f^\pi</math></u>
373 5	373	(5/2 <sup>+</sup> )	0	(3/2 <sup>+</sup> )
641 16	1014	(7/2 <sup>+</sup> )	373	(5/2 <sup>+</sup> )

 $\text{C}(^{36}\text{Mg}, ^{35}\text{Na}\gamma)$  2014Do05Level Scheme

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**Band(A):  $K^\pi=(3/2^+)$   
rotational band  
predicted by the shell  
model**

**( $7/2^+$ ) 1014**

**641**

**( $5/2^+$ ) 373**

**373**

**( $3/2^+$ ) 0**

$^{35}_{11}\text{Na}_{24}$