## <sup>9</sup>Be(<sup>38</sup>Si,<sup>33</sup>Naγ) 2011Ga15

History							
Туре	Author	Citation	Literature Cutoff Date				
Full Evaluation	Jun Chen and Balraj Singh	NDS 199,1 (2025)	30-Sep-2024				

2011Ga15: E=83 MeV/nucleon <sup>38</sup>Si beam produced by fragmentation of 140 MeV/nucleon <sup>48</sup>Ca primary beam delivered by the Coupled Cyclotron Facility of the National Superconducting Cyclotron Laboratory (NSCL) onto a 752 mg/cm<sup>2</sup> <sup>9</sup>Be fragmentation target. Isotope of interest selected in the A1900 fragment separator and detected in the focal plane of the S800 spectrograph. A 32-fold segmented high-purity Ge detector array (SeGA) was used for detecting  $\gamma$  rays. Measured E $\gamma$ . Deduced levels. Calculated transition strengths. Comparison with shell model calculations.

#### <sup>33</sup>Na Levels

E(level) <sup>†</sup>	Jπ‡	Comments		
0#	$(3/2^+)$			
429 <mark>#</mark> 5	$(5/2^+)$			
1117 <sup>#</sup> 8	(7/2 <sup>+</sup> )	For a possible 1117-keV transition to the g.s., branching ratio is calculated as 4.2% (2011GaZZ), which is too weak to be seen in the current work.		

<sup>†</sup> From  $E\gamma$  values.

<sup>‡</sup> From Monte-Carlo shell-model calculations using the SPDF-M effective interaction.

<sup>#</sup> Band(A):  $K^{\pi}=3/2^+$  band. Rotational band predicted by shell-model calculations.

### $\gamma(^{33}\text{Na})$

$E_{\gamma}^{\dagger}$	$E_i$ (level)	$\mathbf{J}_i^{\pi}$	$\mathbf{E}_{f}$	$\mathbf{J}_{f}^{\pi}$
429 5	429	$(5/2^+)$	0	$(3/2^+)$
688 6	1117	$(7/2^+)$	429	$(5/2^+)$

<sup>†</sup> From 2011Ga15.

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## Level Scheme



 $^{33}_{11}Na_{22}$ 



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<sup>33</sup><sub>11</sub>Na<sub>22</sub>