Coulomb excitation 2009Hu03

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	M. Shamsuzzoha Basunia	NDS 113, 909 (2012)	1-Jan-2012

^{29}Na beam was produced in the primary reaction ^{181}Ta(p,X), E_p=500 MeV and bombarded ^{110}Pd target with E=70 MeV; γ-rays were measured using 6 Compton-suppressed clover HPGe detectors; an annular double-sided silicon detector was used for scattered beam and recoiling target particle detection; Coulomb excitation cross section for the $5/2^+$ to $3/2^+$ transition in ^{29}Na was deduced relative to known 2^+ to 0^+ transition in ^{110}Pa.

^{29}Na Levels

E(level)	J^π	$T_{1/2}$	Comments
0	$3/2^+$	44.1 ms *9*	J^π,$T_{1/2}$: from Adopted Levels.
72	$5/2^+$		E(level),J^π: from 2009Hu03.

$\gamma(^{29}Na)$

E_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.	Comments
72	72	$5/2^+$	0	$3/2^+$	M1+E2	E_γ,Mult.: from 2009Hu03. E2 matrix element ($5/2^+$ to $3/2^+$)=0.237 eb 21, corresponds to B(E2)(W.u.)=17.7 *32* (2009Hu03). The statistical uncertainty arising from the measured peak areas, ≈16%, dominates the quoted $1-\sigma$ error. Other contributions include uncertainties in the beam composition and target purity, ≈3% and <0.1% respectively, along with ≈6% systematic uncertainty in the magnitudes (and signs) of the matrix elements corresponding to couplings with higher-lying states in ^{110}Pd (and ^{29}Na), in addition to the ≈2% uncertainty on the relative γ-ray efficiency measurements; all of which are much less significant. The value for the matrix element is consistent with that of 0.232 predicted by shell-model. Q=0.524 eb 46 is deduced from the transition matrix element and rotational model (assuming prolate deformation) in agreement with shell-model prediction of 0.513 eb.

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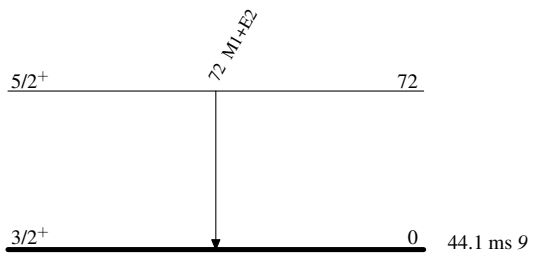
Level Scheme



$^{29}_{11}Na_{18}$