## $^{1}$H($^{22}$Na,p):res 2013Ji13

History

| Type | Author | Citation | Literature Cutoff Date |
|---|---|---|---|
| Full Evaluation | M. S. Basunia[#], A. Chakraborty[##] | NDS 171, 1 (2021) | 1-Jun-2020 |

Based on XUNDL:
Compiled by C.D. Nesaraja (ORNL), August 12, 2014.

Resonant scattering of $^{22}$Na(p,p) measured using thick target inverse-kinematic method. E($^{22}$Na)=37.1 MeV *10* beam produced in charge exchange reaction $^{1}$He($^{22}$Ne,$^{22}$Na)n at E=6.0 MeV/nucleon using CRIB separator at RIBF-RIKEN facility of University of Tokyo. Scattered protons were detected using ΔE-E Si detectors. Measured proton energy spectrum. Deduced $J^{\pi}$ and proton partial widths for resonance states. R-matrix analysis was applied to the experimental excitation function to deduce the $^{23}$Mg resonance parameters with the assumption of only elastic scattering in the analysis. Proton spectroscopic factor for $l$=0 resonance calculated using the shell model code NUSHELL.

### $^{23}$Mg Levels

| E(level)[†] | $J^{\pi}$[‡] | S[#] | Comments |
|---|---|---|---|
| 8611 *20* | (5/2,7/2,9/2)$^{-}$ | | $\Gamma_p$=3.2 keV *10*<br>E(level): From Ep(c.m.)=1030 keV *20*. |
| 8793 *13* | 7/2$^{+}$ | 0.023 *4* | $\Gamma_p$=1.2 keV *3*<br>S: From $\Gamma_{sp}$=67 keV.<br>E(level): From Ep(c.m.)=1212 keV *13*. |
| 8916 *15* | 5/2$^{+}$ | 0.014 *5* | $\Gamma_p$=2.3 keV *7*<br>S: From $\Gamma_{sp}$=182 keV.<br>E(level): From Ep(c.m.)=1335 keV *15*. |

[†] From 2013Ji13 based on Ep(c.m) + Sp($^{23}$Mg). Ep(c.m.) values are listed in comments section. In AME2016 (2017Wa10) S(p)=7580.97 *23*. 2013Ji13 note the uncertainty of ΔEp(c.m.) within 20 to to 15 keV in increasing order for Ep(c.m.). Evaluators assign as of the reported uncertainty in resonance levels.

[‡] Proposed by 2013Ji13, based on R-matrix analysis of measured excitation function.

[#] Experimental spectroscopic factor based on theoretical single-particle widths.