

$^1\text{H}(^{46}\text{Ar},\text{p})$ :resonance **2018Br04**

Type	Author	Citation	History	Literature Cutoff Date
Full Evaluation	S. Ota and E. A. Mccutchan	NDS 203,1 (2025)		1-Apr-2025

**2018Br04:** Resonant elastic proton scattering on  $^{46}\text{Ar}$ . An  $^{46}\text{Ar}$  beam was produced by a 140 MeV/u  $^{48}\text{Ca}$  beam and reaccelerated to 4.6 MeV/u at ReA3, NSCL. Fragments were selected using the A1900 fragment separator and identified using a thin ion chamber. Selected beam particles were transported into the active volume of the Active-Target Time Projection Chamber (AT-TPC), filled with isobutane ( $\text{C}_4\text{H}_{10}$ ) and placed in a uniform magnetic field generated by a solenoidal magnet. Recoiling protons were detected in the sensor plane on the end of AT-TPC, consisting of a mosaic of 10240 equilateral triangles for x and y position information. Measured proton tracks,  $\sigma(E_p)$ . Deduced resonance energies, widths, J,  $\pi$ , spectroscopic factors from R-Matrix analysis; deduced isobaric analogue states in  $^{47}\text{Ar}$ .

 $^{47}\text{K}$  Levels

All resonance properties including energies, J,  $\pi$ , widths, spectroscopic factors (S) are extracted from an R-Matrix fit to measured cross sections.

E(level) <sup>†</sup>	J <sup><math>\pi</math></sup>	$\Gamma$	S	Comments
$15.91 \times 10^3$ 11	$3/2^-$	15 keV 10	0.27	$E_{\text{res}}(\text{c.m.})=2680$ 108(syst)20(stat). isobaric analogue state in $^{47}\text{Ar}$ at $E_x=0$ 91 (syst) 28 (stat). $\Gamma_p=4.3$ keV 4; uncertainties of S=3 (syst) +21-13 (stat). $T_z=11/2$ ( $^{47}\text{Ar}$ ).
$16.13 \times 10^3$ 12	$1/2^+$	30 keV 10	0.027	$E_{\text{res}}(\text{c.m.})=2990$ +117-124 (syst) 20 (stat). isobaric analogue state in $^{47}\text{Ar}$ at $E_x=310$ +91-92 (syst) 28 (stat). $\Gamma_p=20$ keV 2; uncertainties of S=6 (syst) +13-7 (stat). $T_z=9/2$ ( $^{47}\text{K}$ ).
$16.51 \times 10^3$ 13	$1/2^+$	18 keV 10	0.008	$E_{\text{res}}(\text{c.m.})=3280$ +125-127 (syst) 20 (stat). isobaric analogue state in $^{47}\text{Ar}$ at $E_x=600$ +92-93 (syst) 28 (stat). $\Gamma_p=8.0$ keV 8; uncertainties of S=2 (syst) +5-6 (stat). $T_z=9/2$ ( $^{47}\text{K}$ ).
$16.88 \times 10^3$ 14	$1/2^-$	34 keV 10	0.42	$E_{\text{res}}(\text{c.m.})=3650$ +137-147 (syst) 20 (stat). isobaric analogue state in $^{47}\text{Ar}$ at $E_x=970$ +95-99 (syst) 28 (stat). $\Gamma_p=24$ keV 2; uncertainties of S=5 (syst) 9 (stat). $T_z=11/2$ ( $^{47}\text{Ar}$ ).

<sup>†</sup> Deduced from  $E_{\text{res}}(\text{c.m.})$  and  $S_p=13230$  3 (2021Wa16) by evaluators.