^{2}H(^{34}Si,pγ) 2014Bu01

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Jun Chen and Balraj Singh	ENSDF	31-May-2015

(d,p) transfer reaction in inverse kinematics.

2014Bu01: E=20.5 MeV/nucleon ^{34}Si beam was produced by fragmentation of a 55 MeV/nucleon $^{36}S^{16+}$ primary beam on a 1075 μm-thick Be target. The fragments were separated, and selected using the LISE3 spectrometer at GANIL, with an intensity of 1.1 $\times 10^5$ pps and a purity of 95% for ^{34}Si beam. Target was a 2.6 mg/cm^2 *1* Cd_2. Heavy products were detected and identified with two position-sensitive multiwire proportional chambers (FWHM=1 mm) placed 0.92 m and 0.52 m upstream of target, an ionization chamber placed 40cm downstream of target and a 1.5cm-thick plastic scintillator located behind the IC for energy loss, tof measurements, and beam monitoring; Protons were detected with four modules of the MUST2 array placed 10 cm from the target covering polar angles ranging from 105° to 150° with respect to the beam direction and a 16 Si strip annular detector at a distance of 11.3 cm to cover polar angles from 156° to 168°; γ rays were detected with four segmented Ge detectors from the EXOGAM array perpendicular to the beam axis at a mean distance of 5 cm, and 9 cm downstream from the target with efficiency ε= 3.8 % *2* at 1 MeV. Measured σ(Ep,θ), Eγ, Iγ, (^{34}Si)p-coin. Deduced levels, J, π, l-transfer, spectroscopic factors from ADWA analysis. Comparison with shell-model calculations.

^{35}Si Levels

E(level)[†]	J$^\pi$[‡]	L[#]	S[#]	Comments
0	7/2$^-$	3	0.56 *6*	Configuration=$f_{7/2}$ orbital.
910 *3*	3/2$^-$	1	0.69 *10*	E(level): from γ-ray peak at 910 keV. 906 keV *32* from proton spectrum. Configuration=$p_{3/2}$ orbital.
2044 *7*	1/2$^-$	1	0.73 *10*	E(level): from 1033γ+910γ. 2060 *50* from proton spectrum (2014Bu01). J$^\pi$: large spectroscopic factor discards 3/2$^-$ component. Configuration=$p_{1/2}$ orbital.
≈5500	5/2$^-$	3	0.32 *3*	Additional information 1. Configuration=$f_{5/2}$ orbital.

[†] From 2014Bu01. A tentative structure at 3.33 MeV *12* probably corresponds to the elastic deuteron break-up process.

[‡] As given in 2014Bu01 based on L-transfers and shell-model predictions.

[#] From ADWA fits to measured proton angular distributions (2014Bu01). Additional uncertainty of ≈15% in spectroscopic factors due to global potential in the ADWA calculation is not included.

γ(^{35}Si)

E$_\gamma$[†]	I$_\gamma$[†]	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	Comments
910 *3*	82 *10*	910	3/2$^-$	0	7/2$^-$	I$_\gamma$: this values agrees with 72 *11* expected from 1894 *185* number of protons in a peak at 906 keV *32*.
1134 *6*		2044	1/2$^-$	910	3/2$^-$	

[†] From 2014Bu01.

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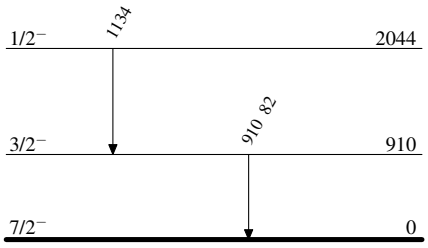
Level Scheme

Intensities: Relative I_γ



$^{35}_{14}Si_{21}$