Pb(^{35}Al,^{34}Alnγ) 2017Ch36

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh and Jun Chen	ENSDF	15-Dec-2017

Coulomb dissociation of ^{35}Al on Pb target.

2017Ch36: ^{35}Al ions were produced by fragmentation of a 531 MeV/nucleon ^{40}Ar beam provided by the Heavy Ion Synchrotron (SIS18) at GSI. The fragments were separated by the FRagment Separator (FRS) according to magnetic rigidity. The secondary target was 2 g/cm^2 lead. Heavy breakup fragments were detected by 8 DSSSDs and separated by a large-area dipole magnet (ALADIN) and tracked using two large scintillator fiber detectors (GFIs); breakup neutrons were detected by the high-efficiency Large Area Neutron Detector (LAND); γ rays were detected with a spherical 4π Crystal Ball detector array of 162 NaI(Tl) crystals. Measured E(fragment), E(n), Eγ, Coulomb dissociation cross sections. Deduced relative populations of ^{34}Al, g.s. configuration of ^{35}Al. Comparison with theoretical calculations. 2014ChZZ report is from the same group.

^{35}Al Levels

E(level)	J$^\pi$	Comments
0	(5/2$^+$,3/2$^+$,1/2$^+$)	J$^\pi$: from comparisons of measured differential Coulomb dissociation cross section of ^{35}Al breaking up into ^{34}Al in its g.s. and/or 46-keV isomer with theoretical calculations from the direct breakup model using the plane-wave approximation assuming the valence neutron at different orbitals. Shell-model calculations using the SDPF-M interaction, and Coulomb breakup results favor 5/2$^+$. Assignment is (5/2$^+$) in Adopted Levels. Major configurations and spectroscopic factor for neutron deduced by 2017Ch36: (g.s.,4$^-$ in ^{34}Al)$\otimes\nu p_{3/2}$, spectroscopic factor=0.36 *9* + (46 keV,1$^+$ in ^{34}Al)$\otimes\nu d_{3/2}$, spectroscopic factor=1.47 *22* for J^π=5/2$^+$ of ^{35}Al g.s. For J^π=1/2$^+$ or 3/2$^+$ of ^{35}Al g.s., (g.s.,4$^-$ in ^{34}Al)$\otimes\nu f_{7/2}$, spectroscopic factor=1.03 *43* + (46 keV,1$^+$ in ^{34}Al)$\otimes\nu s_{1/2}$, spectroscopic factor=0.62 *7*. Other configurations for J^π=1/2$^+$,3/2$^+$ of ^{35}Al g.s.: (46 keV,1$^+$ in ^{34}Al)$\otimes\nu s_{1/2}$, spectroscopic factor=0.72 *8*; and (46 keV,1$^+$ in ^{34}Al)$\otimes\nu s_{1/2}$, spectroscopic factor=0.45 *7* + (46 keV,1$^+$ in ^{34}Al)$\otimes\nu d_{5/2}$, spectroscopic factor=0.94 *22*.