⁹Be(³¹Ar,³⁰Clp) 2018Mu18

| History | | | | |
|-----------------|-------------------------------|------------------|------------------------|--|
| Туре | Author | Citation | Literature Cutoff Date | |
| Full Evaluation | M. S. Basunia, A. Chakraborty | NDS 197,1 (2024) | 31-May-2024 | |

³¹Ar secondary beam, E=620 MeV/nucleon, was produced by fragmentation of ³⁶Ar primary beam, E=885 MeV/nucleon, on a beryllium target at the SIS-FRS facility at GSI. The secondary target was also ⁹Be. Excited states of ³⁰Cl were populated by inelastic excitation of secondary ³¹Ar beam and identified by registering ²⁹S + p + p correlations. Projectile–like particles were analyzed with the Fragment Separator, protons and heavy recoils were detected with a DSSD array consisting of 4 DSSDs. Measured recoil-p-p correlation. Deduced excited levels of ³⁰Cl along with other isotopes.

³⁰Cl Levels

| E(level) [†] | J^{π} | Comments |
|-------------------------|-----------|---|
| 0 | 3+ | $T_{1/2}$: $T_{1/2} > 100$ ns, estimated in 2018Mu18 based on the Thomas-Ehrman shift, from 3 ⁺ ³⁰ Al g.s. to the 3 ⁺ g.s. in ³⁰ Cl, of E _r = 50-150 keV and conclude that for such low decay energies, the ³⁰ Cl g.s. should live a sufficiently long time to survive the flight through the second achromatic stage of the FRS fragment separator (of ≈ 150 ns). |
| | | $E_{\rm r}({\rm c.m.})=480 {\rm ~keV} {\rm ~20}.$ |
| 490 <i>36</i> | | $E_{r}(c.m.) = 970 \text{ keV } 30.$ |
| 870 54 | | $E_{r}(c.m.) = 1350 \text{ keV } 50.$ |
| 1520 54 | | $E_r(c.m.)=2000 \text{ keV } 50.$ |
| $2.52 \times 10^3 \ 20$ | | $E_r(c.m.)=3000 \text{ keV } 200.$ |
| | | |

[†] Deduced from the reported resonance energies E_r , listed in comments, in 2018Mu18, and S(p)=-480 keV 20 (2021Wa16).