## $^{9}$Be($^{37}$Ca,X) 2024Dr01

$J^{\pi}=3/2^{+}$ for $^{37}$Ca ground state.

2024Dr01: A 72-MeV/nucleon $^{37}$Ca secondary beam was produced via the fragmentation of a 95-MeV/nucleon $^{40}Ca^{20+}$ primary beam impinging on a Be target. Experimental setup includes the CAESium-iodide scintillator ARray (CAESAR) for detecting $\gamma$ rays, a DSSD-CsI(Tl) ΔE-E Ring Telescope for detecting protons, a Scintillating-Fiber Array (SFA) and the S800 spectrograph for detecting heavy residuals. Measured total decay-energy spectra of proton emission using invariant-mass spectroscopy. Observed the first excited state in $^{35}$Ca via the 2p+$^{33}$Ar exit channel. Comparisons with shell-model calculations.

### $^{35}$Ca Levels

| E(level) | $J^{\pi}$ | Comments |
|---|---|---|
| $2.08\times10^{3}$ *10* | $(3/2^{+})$ | E(level): from total decay energy of 2p+$^{33}$Ar $E_T$=1667 keV *20*.<br>$J^{\pi}$: shell-model calculations. |