^{69}Br

The first observation of the unbound ground state of ^{69}Br was reported by Rogers et al. in 2011 in " Ground-state proton decay of ^{69}Br and implications for the ^{68}Se astrophysical rapid proton-capture process waiting point" (2011Ro18). ^{69}Br was produced in the ^{70}Se(p,2n) pickup or quasi-fusion reaction on a $(C_3H_6)_n$) target. The secondary ^{70}Se beam was produced at the Coupled Cyclotron Facility of the National Superconducting Cyclotron Laboratory at Michigan State University from a 140 MeV/nucleon ^{78}Kr beam. The decay energy of ^{69}Br was calculated from coincidence protons detected in the High Resolution Array (HiRA) and ^{68}Se fragments detected in the S800 spectrograph. "The final analysis yields a best-fit value for the proton separation energy, assuming a ground state with $J^{\pi} = 3/2^{-}(l = 1)$, of $S_p(^{69}\mathrm{Br}) = -785^{+34}_{-40}$ keV corresponding to a mass excess of $\Delta = -46115^{+34}_{-40}$ keV."

Earlier searches for proton-radioactivity of ^{69}Br were unsuccessful (1989Ho19, 1990Ro15). In 1991, Mohar et al. reported ^{69}Br as bound (1991Mo10), however, a subsequent experiment established an upper limit for the half-life of 100 ns (1995Bl06).

1989Ho19 E. Hourani, F. Azaiez, Ph. Dessagne, A. Elayi *et al.*, Z. Phys. A **334**, 277 (1989).

1990Ro15 J. D. Robertson, J. E. Reiff, T. F. Lang, D. M. Moltz, and J. Cerny, Phys. Rev. C **42**, 1922 (1990).

1991Mo10 M. F. Mohar, D. Bazin, W. Benenson, D. J. Morrissey *et al.*, Phys. Rev. Lett. **66**, 1571 (1991).

1995Bl06 B. Blank, S. Andriamonje, S. Czajkowski, F. Davi *et al.*, Phys. Rev. Lett. **74**, 4611 (1995).

2011Ro18 A. M. Rogers, M. A. Famiano, W. G. Lynch, M. S. Wallace *et al.*, Phys. Rev. Lett. **106**, 252503 (2011).

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