

${}^9\text{Be}({}^{24}\text{Mg}, {}^{20}\text{Mg})$  **1992Ku07,1992Ku24**

Type	Author	Citation	History	Literature Cutoff Date
Full Evaluation	J. H. Kelley, G. C. Sheu	ENSDF		20-June-2019

**1992Ku07,1992Ku24:** States in  ${}^{20}\text{Na}$  were studied by analyzing the  $\beta^+$  decay of  ${}^{20}\text{Mg}$ . A beam of  ${}^{20}\text{Mg}$  ions was produced by fragmenting a 100 MeV/nucleon  ${}^{24}\text{Mg}$  beam in a thick Be target. The  ${}^{20}\text{Mg}$  beam was magnetically purified and stopped in the center of a stack of Si detectors. Each time a  ${}^{20}\text{Mg}$  implantation was detected the beam was stopped for a 200 ms period so the decay could be measured.

Decay to various  ${}^{20}\text{Na}$  states was observed with a lifetime  $T_{1/2}=114$  ms *17*. 85% of detected events were connected with  ${}^{20}\text{Na}$  decay, which implies  $\% \beta^+ p=15\%$ .

**2015GI03:** A beam of  ${}^{20}\text{Mg}$  ions was produced by fragmenting a 170 MeV/nucleon  ${}^{24}\text{Mg}$  beam on a  ${}^9\text{Be}$  target at the A1900/NSCL fragment separator. In this study, the mass of the lowest  $T=2$  state of  ${}^{20}\text{Na}$  was measured in the  $J^\pi=0^+$  to  $0^+$  superallowed  $\beta$  decay of  ${}^{20}\text{Mg}$ . The beam was implanted in a 25 mm thick plastic scintillator that was surrounded by 16 elements of the SeGA germanium detector array. The  $\beta$ - $\gamma$  coincident events were analyzed. Their results validate the IMME without the need for additional terms.

**2017Wr02:** XUNDL dataset compiled by TUNL, 2017.

A beam of  ${}^{20}\text{Mg}$  ions was produced by fragmenting a  ${}^{24}\text{Mg}$  beam on a  ${}^9\text{Be}$  target using the NSCL/A1900 fragment separator. The beam was implanted  $\approx 10$  mm deep into a 25 mm thick plastic scintillator that was surrounded by the SeGA germanium array. The SeGA was configured with two coaxial rings of eight  $\gamma$ -ray detectors. The  $\beta$ - $\gamma$  coincidences were analyzed. Using the  $\Gamma_{\gamma_0}/\Gamma=(80\ 15)\%$  branching ratio, the  $\beta$ -p feeding of (0.0156 38)% was deduced for populating  ${}^{19}\text{Ne}(4034)$ ; the  ${}^{20}\text{Na}$  levels feeding  ${}^{19}\text{Ne}^*(4034)$  are not determined.

Finally, the authors suggest a new experimental configuration that would measure  $\beta$ -p- $\alpha$  coincidences and would have a sensitivity for improving on the  $\Gamma_\alpha/\Gamma \leq 5 \times 10^{-5}$  limit with a 10% accuracy.

**2018GI01:** XUNDL dataset compiled by TUNL, 2018.

A cocktail beam including a  ${}^{20}\text{Mg}$  ion component, produced at the MSU/A1900 fragment separator, was implanted into a 26.7 mm thick plastic scintillator that was surrounded by the SeGA array, which was configured as two rings of eight HPGe detectors. The  $\beta$ - $\gamma$  coincidence events were analyzed with an exclusive focus on primary transitions from  ${}^{20}\text{Na}^*(2647)$ .

 ${}^{20}\text{Mg}$  Levels

E(level)	$T_{1/2}$	Comments
0	114 ms <i>17</i>	$T_{1/2}$ : From (1992Ku07).