^{9}Be(^{13}B,X) 2014Es07

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	J. H. Kelley, C. G. Sheu and J. E. Purcell	NDS 198,1 (2024)	1-Aug-2024

1988Ta10: Measured the interaction cross section of ≈790 MeV/nucleon ^{13}B on ^{9}Be, ^{nat}C, ^{27}Al targets at the LBNL/Bevalac. Analyzed cross sections in a Glauber model and deduced the interaction radius, R_I=2.76 fm *10*. They also deduced the rms radii for the proton (2.42 fm *11*), neutron (2.50 fm *12*) and matter (2.46 fm *12*) distributions.

2014Es07: XUNDL dataset compiled by TUNL, 2014.

The authors measured the charge changing reaction cross sections of boron isotopes and deduced their root mean square proton radii.

Beams of ≈850 − 900 MeV/nucleon boron isotopes were produced by fragmenting ^{22}Ne($^{10,14-17}$B) and ^{40}Ar($^{11-13}$B) ions on a thick ^{9}Be foil at the GSI/FRS fragment separator. The beam species were identified by ΔE (ionization chamber) vs time-of-flight before they impinged on a 4.010 g/cm^2 thick carbon target. An ionization chamber located after the target was used to identify charge changing reaction events.

In the discussion, the rms proton radii for ^{10,11}B are obtained from e^- and π^- scattering and muonic X-ray studies, while for heavier boron isotopes the proton radii are obtained by analyzing the charge changing cross sections, σ_α, in a Glauber model. The proton (2.48 fm *3*) and matter (2.41 fm *5*) rms radii values are given for ^{13}B. Finally, the rms proton radii are compared with rms matter radii derived from interaction cross section measurements in the literature.

2017Ta06: Measured reaction cross sections on ^{1}H, ^{9}Be, $^{nat.}$C, and ^{27}Al at the NIRS/Japan. Analyzed data using Glauber model. Deduced matter density distribution.

See other analysis in (1990Li39, 1990Lo10, 1992La13, 1995Pe19, 1996Sh13, 1997Ho04, 1997Ka32, 2000Bh09, 2001Oz04, 2003Um02, 2004Ne16, 2012Ji01, 2017Ah08, 2019Fo08).

^{13}B Levels

E(level)	J^{π} †	Comments
0	3/2$^-$	R_{rms}(proton)=2.48 fm *3* obtained from Glauber model analysis of the charge changing cross section σ_α=723 mb *6* at E(^{13}B)=897 MeV/nucleon.

† From Adopted Levels.