$^{1}H(^{9}C,P)$ 2013Ma23

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	J. H. Kelley, B. Grees	ENSDF	31-July-2020

2013Ma23: XUNDL data set compiled by TUNL (2013). The authors measured the angular distribution of $^{9}C(p,p)$ elastic scattering in inverse kinematics at E(^{9}C)≈300 MeV/nucleon. Results were analyzed to evaluate the ^{9}C matter root-mean-square radius ($R^{r.m.s.}_{matter}$).

A beam of ≈ 277-300 MeV/nucleon ^{9}C ions, from the Chiba fragment separator facility at the Heavy Ion Medical Accelerator, impinged on a 5 mm thick solid hydrogen target. Scattered ^{9}C nuclei, which have no bound excited states, were detected in a downstream plastic scintillator detector while recoiling protons were identified and measured in either of the two recoil proton spectrometer telescopes comprised of a recoil drift chamber, a plastic scintillator and a set of NaI(Tl) calorimeters. Selection of "exclusive" events with protons in coincidence with scattered ^{9}C nuclei permitted isolation of elastic events.

Proton angular distributions were deduced and analyzed over the range θ_{lab}=65°−85°. The $R^{r.m.s.}_{matter}$=2.43 fm +55-28 is deduced.

See another analysis of these data in (2014Ra12).

Theory: 2009Ib01, 2009Ib03: Calculations of the angular distributions of cross section and analyzing power were carried out at 60 and 700 MeV/nucleon using a Glauber diffraction theory model.

^{9}C Levels

E(level)	Comments
0.0	$R^{r.m.s.}_{matter}$=2.43 fm +55-28.