^{208}Pb(^{20}Mg,^{20}Mg′) 2008Iw04

History

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

2008Iw04: The Coulomb excitation of ^{20}Mg was studied. A beam of 58 MeV/nucleon ^{20}Mg ions, produced by fragmentation of a 135 MeV/nucleon ^{24}Mg beam on a Ni target, impinged on a 226 μg/cm^2 target. A set of PPACs determined the incident angle and event-by-event position on target, while the scattered ^{20}Mg ions were detected in an array of position sensitive ΔE-E Si strip detectors. An array of 68 NaI(Tl) scintillators surrounded the target.

A de-excitation γ-ray transition corresponding to E_γ=1.61 MeV *6* was observed in the Doppler corrected NaI energy spectrum. The angular distribution of associated ^{20}Mg scattered particles is consistent with l=2. There was no evidence of any other transitions populated in the inelastic scattering. The cross sections were measured on both Pb and ^{nat}C targets so the nuclear and Coulomb components could be analyzed.

^{20}Mg Levels

E(level)	J^π	L	σ (mb)	Comments
0	0^+			
1610 *60*	2^+	2	105 *10*	B(E2)↑=0.0177 *32* J^π: From $\sigma(\theta)$ distribution and DWBA analysis. β_2=0.44 *4*. Proton matrix element (M_p)=13.3 fm^2 *12*; M_p/M_n=2.51 *25*. σ (mb): The cross sections on Pb and ^{nat}C targets were measured as σ(Pb)=105 mb *10* and $\sigma(^{nat}C)$=20 mb *2*.

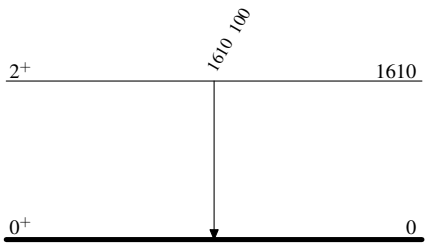
$\gamma(^{20}Mg)$

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π
1610	2^+	1610 *60*	100	0	0^+

^{208}Pb(^{20}Mg,^{20}Mg′) 2008Iw04

Level Scheme

Intensities: % photon branching from each level



$^{20}_{12}Mg_8$