$^{12}C(^{22}Mg,^{22}Mg')$ 2015Ma19

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	M. Shamsuzzoha Basunia	NDS 127, 69(2015)	1-Apr-2015

^{22}Mg beam, E=53.5 MeV/nucleon, was produced from fragmentation of ^{28}Si beam, E=135 MeV/nucleon, on a ^{9}Be target. Particle identification of ^{22}Mg was done by means of Bρ-ΔE-tof method using RIPS beamline at RIBF-RIKEN facility. Detectors: Around ^{12}C secondary target, a γ detector array of 160 NaI(Tl) detectors, after which there were five layers of Si-strip detectors for detection of heavy fragments and protons. Analyzed excitation energy distribution from invariant mass of two-protons emissions in ^{20}Ne+p+p channel, momentum distributions of two protons in the excitation energy window of 12.5-18 MeV, and opening angle distribution of two protons. The calculations compared the three-body (^{20}Ne+p+p) emission with 2-body (^{20}Ne+^{2}He) emission.

The momentum distribution as shown in figure 3a of 2015Ma19 is and angular distribution in figure 3b show a peak structure, ascribed to diproton (^{2}He) emission. This gives evidence for component of diproton (^{2}He) emission from high lying level in ^{22}Mg.

^{22}Mg Levels

E(level)	J^{π}	Comments
15.3×10^{3} *2*	7	E(level): excitation energy window=12.5 to 18 MeV. Analysis shows evidence of diproton emission component based on peak structures in observed momentum and angle distributions.