C(^{31}Ne,^{30}Neγ) 2014Na10

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	M. S. Basunia, A. Chakraborty	NDS 197,1 (2024)	31-May-2024

Includes Pb(^{31}Ne,^{30}Neγ).

2014Na10: ^{31}Ne beam was produced by fragmentation of ^{48}Ca primary beam, E=345 MeV/nucleon, on a Be target at the RIKEN Nishina Center and the Center for Nuclear Study, University of Tokyo. The fragments were separated by BigRips separator and the secondary beam of ^{31}Ne was incident on Pb (thickness 3.37 g/cm^2) and C (thickness 2.54 g/cm^2) targets with mean energies of 234- and 230-MeV/nucleon (mid target), respectively, at the entrance of ZeroDegree Spectrometer (ZDS). Outgoing ^{30}Ne fragments were identified by ZDS and also used to extract momentum distribution of the ^{30}Ne residues, γ rays in coincidence with ^{30}Ne were detected by DALI2 γ-ray detector array which consisted of 182 NaI(Tl) scintillator crystals. Deduced inclusive and γ-ray tagged partial cross sections for one-neutron-removal from ^{31}Ne with carbon and Pb targets.

Other: 2009Na39 (same research group of 2014Na10, same experiment).

^{30}Ne Levels

E(level)	J^π	Comments
0.0	0^+	Inclusive σ_{1n}(^{31}Ne,^{30}Ne): 90 mb *7* (carbon target), 720 mb *61* (lead target), and 529 mb *63* (Coulomb breakup). Partial cross section (feeding g.s. of ^{30}Ne directly) σ_{1n}(^{31}Ne,^{30}Ne*): 33 mb *15* (carbon target), 518 mb *103* (lead target), and 448 mb *108* (Coulomb breakup).
797 *4*	(2^+)	J^π: from the Adopted Levels. Partial cross section (feeding excited states of ^{30}Ne) σ_{1n}(^{31}Ne,^{30}Ne*): 57 mb *13* (carbon target), 201 mb *83* (lead target), and 81 mb *87* (Coulomb breakup). It is assumed that all the populated bound excited states above this level feed the ground state via this 2^+ state.

γ(^{30}Ne)

E_γ	E_i(level)	J_i^π	E_f	J_f^π	Comments
797 *4*	797	(2^+)	0.0	0^+	E_γ: from Adopted Gammas.

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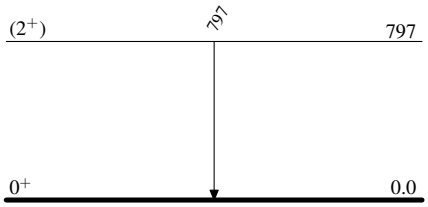
Level Scheme



$^{30}_{10}Ne_{20}$