Coulomb excitation 2008Et01,2002Pr12

History

Type Author Citation Literature Cutoff Date
Full Evaluation M. Shamsuzzoha Basunia NDS 111, 2331 (2010) 30-Jun-2010

2008Et01: ³⁰Na beam of 80.1 MeV/nucleon was produced from a ⁴⁸Ca primary beam, 140 MeV/nucleon, bombarding a thick ⁹Be target; particles identified by energy loss and Time-of-Flight; Coulomb excitation of the secondary ³⁰Na beam by a ²⁰⁹Bi target; Measured E_γ using SeGA array of 18 HPGe detectors.

2002Pr12: ³⁰Na beam of 55.6 MeV/nucleon was produced from a ⁴⁸Ca primary beam, 80 MeV/nucleon, bombarding a thick ⁹Be target; particles identified by charge determination and Time-of-Flight; Coulomb excitation of the secondary ³⁰Na beam by a ¹⁹⁷Au target; γ-rays were detected by an array of 38 NaI(Tl) detectors; deduced Coulomb deformation parameter=0.41 *10* and matter deformation parameter=0.46 *11*; also deduced an intrinsic quadrupole moment=0.51 *15* b.

³⁰Na Levels

E(level) J^{π} Comments

O.0 2^{+} J^{π} : from Adopted Levels.

424 3 J^{π} : from comparison of experimental and MCSM calculated level energies.

B(E2)↑=0.0147 21 (2008Et01), deduced from measured Coulomb excitation cross section using predicted value of B(M1)(2⁺ g.s. to 3⁺) =0.268. Predicted value of B(E2)=0.0168 in 2008Et01. B(E2)↑=0.0130 +90-65 (2002Pr12), extracted from coupled-channels calculations that took into account both electromagnetic and nuclear contributions to the scattering reaction.

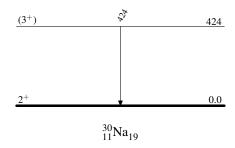
 γ (³⁰Na

Comments

 $\frac{E_{\gamma}^{\dagger}}{424} \frac{E_{i}(\text{level})}{424} \frac{J_{i}^{\pi}}{(3^{+})} \frac{E_{f}}{0.0} \frac{J_{f}^{\pi}}{2^{+}} \frac{E_{\gamma}: 433 \text{ keV } 16 \text{ (2002Pr12)}.}$

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Level Scheme



[†] From 2008Et01.