Isovector Quadrupole

Resonance observed in the $^{60}$Ni($^{13}$C,$^{13}$N)$^{60}$Co reaction at $E/A = 100$ MeV TAKASHI ICHIHARA, RIKEN, MASAYASU ISHIHARA, RIKEN, HAJIME OHNUMA, Chiba Institute of Technology, TAKASHI NIIZEKI, Tokyo Kasei University, YOSHITERU SATOU, Tokyo Institute of Technology, HIROYUKI OKAMURA, Cyclotron Radio-Isotope Center, Tohoku University, SHIGERU KUBONO, CNS, University of Tokyo, MASAKI TANAKA, High Energy Accelerator Research Organization (KEK), YOSHIHIDE FUCHI, High Energy Accelerator Research Organization (KEK) — The charge-exchange reaction $^{60}$Ni($^{13}$C,$^{13}$N)$^{60}$Co at $E/A = 100$ MeV has been studied to locate isovector ($\Delta T = 1$) non-spin-flip ($\Delta S = 0$) giant resonances. Besides the giant dipole resonance at $E_x = 8.7$ MeV, another resonance has been observed at $E_x = 20$ MeV with a width of 9 MeV. DWBA analysis on the angular distribution clearly indicated the $L = 2$ multipolarity, attributing the $E_x = 20$ MeV state to the giant isovector quadrupole resonance. The present analysis further indicates that the observed peak exhausts approximately 50 % strength of the isovector L=2 classical energy-weighted sum rule. The same ($^{13}$C,$^{13}$N) reactions at $E/A = 100$ MeV for other target nuclies will be also presented and discussed. A part of this result can be found at the reference of T. Ichihara et al., Phys. Rev. Lett. 89, 142501 (2002).

Ichihara Takashi
RIKEN

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