

NuInt12 : Eighth International Workshop on Neutrino-Nucleus Interactions in the Few-GeV Region



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RCNP E398 experiment $C,O(p,p')$ to measure γ ray branching ratio ($E > 5\text{MeV}$) from the giant resonances of carbon and oxygen in relation to the γ ray production in $C,O(\nu,\nu')$.

Thursday, 25 October 2012 18:00 (1h 30m)

We plan to measure the branching ratios of γ -ray emission ($E_\gamma > 5\text{ MeV}$) from giant resonance of ^{16}O and ^{12}C , as the functions of excitation energy (E_x).

This measurement will provide the fundamental and important information not only for the γ -ray production from primary neutral-current neutrino-oxygen (-carbon) interactions but also for that from the secondary hadronic (neutron-oxygen and -carbon) interactions.

The understanding of the γ -ray production will introduce a new neutrino detection method to Supernova neutrino physics and Neutrino oscillation physics.

In the second stage, we would like to perform $O,C(\text{He},t)$ ($T=1$) experiment at 0 degrees to continue the systematic study of spin-isospin response through the measurement of the γ -ray production with oxygen and carbon nuclei.

Ref.

- [1] T.Mori, M.Sakuda, A.Tamii, H.Toki, M.Nakahata, and K.Ueno, Study of γ -ray production from neutral-current neutrino-Oxygen interaction and the detection of the neutrino from Supernova explosion, AIP Conf. Proc.1269, 418-420, 2010.
- [2] A.Ankowski,O.Benhar,T.Mori,R.Yamaguchi,and M.Sakuda, Analysis of γ -ray production in neutral-current neutrino-oxygen quasi-elastic interactions above 200 MeV, Phys.Rev.Lett.108,052505(2012).

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