RCNP EXPERIMENT E188

PROPOSAL FOR EXPERIMENT AT RCNP

9 January 2002

TITLE: Investigation of the charged-particle decay of the *Isoscalar* Giant Dipole Resonance and the *Isovector* Giant Quadrupole Resonance

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S. Gales	Orsay	P	H. Laurent	Orsay	

RUNNING TIME:

Total running time not including beam preparation — 14 days (2×7)

BEAM LINE:

BEAM REQUIREMENTS:

Type of particle	^{4}He
Beam energy	400 MeV
Beam intensity	10 nA
Other requirements	beam must be halo-free
	highest stability over several days is required

BUDGET: Summary of budget expenses

Experimental expenses — 2,340,000 yen

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SUMMARY OF THE PROPOSAL

The proposed measurements aim at investigation of the charged-partcle decay of the Isoscalar Giant Dipole Resonance (ISGDR). This is in continuation of our investigation of ISGDR initiated at RCNP some time ago. The importance of the ISGDR lies in that, like the giant monopole resonance (GMR), it is a compressional mode and the energy of the ISGDR is related to the nuclar incompressibility, K_A. The ISGDR, thus, provides one of the two direct experimental measurements leading to the compressibility of nuclear matter, K_∞. Decay measurements can provide extremely valuable information on the microscopic structure of the resonance, as also stringent comparisons with available theoretical calculations. In addition, the technique affords many advantages over the standard "singles" measurements in obtaining "clean" spectra, resulting in more accurate determination of the excitation energy of the resonance and, thence, the nuclear incompressibility parameter. In addition, the decay of the Isovector Giant Quadrupole Resonance (IVGQR) will also be investigated in the same measurement(s).