RCNP EXPERIMENT E212

# PROPOSAL FOR EXPERIMENT AT RCNP

13 January 2003

TITLE: Continuing investigation of the charged-particle decay of the *Isoscalar* Giant Dipole Resonance

SPOKESPERSONS:

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EXPERIMENTAL GROUPS:

University of Notre Dame, USA - RCNP, Japan - Kyoto University, Japan - Konan University, Japan - KVI, The Netherlands - IN2P3, Orsay, France - NSCL, Michigan State Univ., USA.

RUNNING TIME:

Total running time not including beam preparation — 8 days

BEAM LINE: WS BEAM REQUIREMENTS:

Type of particle — $^4$He

Beam energy — 400 MeV

Beam intensity — 1 nA

Other requirements

beam must be halo-free highest stability over several days is requi red

BUDGET: Summary of budget expenses

Experimental expenses — 3,000,000 yen

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## SUMMARY OF THE PROPOSAL

The proposed measurements aim at continuing our investigation of the charged-partcle decay of the Isoscalar Giant Dipole Resonance (ISGDR). We have recently measured the proton decay of ISGDR in $^{208}$Pb (experiment E188). On the base of this successful result, we propose to extend these measurements to the lighter nuclei: $^{116}$Sn, $^{90}$Zr, and $^{58}$Ni. Recent calculations have predicted a large branching ratio for proton decay from ISGDR in these nuclei (up to 5 times that for $^{208}$Pb in case of $^{90}$Zr, for example). Decay measurements can provide extremely valuable information on the microscopic structure of the resonance, as also stringent comparisons with available theoretical calculations.