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PROPOSAL TO THE SCC

COINCIDENCE MEASUREMENTS BETWEEN CHARGED PARTICLES  
AND  $\gamma$  RAYS IN A PROTON + NUCLEUS REACTION

SACLAY (D.Ph.N.)

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Total yields of nuclei produced in proton and pion induced reaction have been recently determined by inclusive measurements of prompt  $\gamma$ -rays, using GeLi detectors (1). Strong multi-nucleon removals have been observed, in qualitative agreement with evaporative decay calculations. Charged particles spectra, in the same range of incident energies, are often fitted by prééquilibrum calculations (2). A coincidence measurement between  $\gamma$ -rays and charged particles is proposed to give a better description of the reaction mechanism (a similar experiment with low energy pions is in progress around the 600 MeV Saclay electron Lineac (3) ).

The energy measurement and identification of charged particles will be made using a telescope of solid state detectors. A GeLi detector will measure  $\gamma$ -rays.

The target thickness will be of the order of 10 milligrams. The proton beam intensity requested is a few  $10^8$  to  $10^9$  p/s, the profile being less than 1 square centimeter with a negligible halo. The room background must be as low as possible to avoid pile up in the detectors. An excellent duty cycle (about 40%) will allow to decrease pile up and accidental coincidences.

Before a definitive proposal, we should like to make a test of 10 shifts in order to know if the background conditions allow such an experiment to be carried out.

The GeLi detector being very sensitive, it is necessary to be able to put in evidence a spectrum of gamma rays (p, $\gamma$  reaction) under the future experiment conditions.

The period of such a test might take place on january.

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( $p, \gamma x$ ) COINCIDENCE EXPERIMENT

