

ERASMUS MUNDUS MASTER IN NUCLEAR PHYSICS
Academic Year 2024/2025

MASTER THESIS PROPOSAL

TITLE: Study of (n,alpha) reactions on oxygen-16 and fluorine-19 in support of 3rd and 4th generation nuclear power plants

SUPERVISOR(S): F.-R. LECOLLEY

SUPERVISOR(S) contact- email: fr.lecolley@lpccaen.in2p3.fr
email:

Telephone: 02 31 45 25 45
Telephone:

UNIVERSITY/RESEARCH CENTER: LPC Caen

ABSTRACT

(just few lines 5-10 explaining briefly the idea of the proposed work and the place where it will be developed).

The LPC Caen group “Aval du Cycle” has developed an original device namely SCALP (Scintillating ionization Chamber for ALpha Particle detection in neutron induced reaction) for studying (n,alpha) reactions of interest to nuclear reactors. The first experiments were carried out at the NFS (Ganil, Caen, France) and nELBE (Dresden, Germany) facilities. Analysis of the NFS data revealed a high level of contamination associated with (n,p) reactions on the hydrogen present in the device (electrode epoxy). The aim of the proposed internship is to study the modifications to be made to the device to eliminate this contamination. It will involve carrying out a series of measurements on an Am-Be source at LPC Caen with a modified version of SCALP and analyzing the data collected. Depending on the progress of the work, an initial analysis of the nELBE data may be envisaged.

The internship could be continued on a doctoral contract, with funding from the CAeSAR project (UCN, CNRS).