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Laboratory: FLNR, the ACCULINNA separator group


Subject of the project: **Detection of charge particles generated in heavy ions collisions at low energies**

Project for 2 students (semiconductor detectors/ scintillation detectors/ OTPC - Optical Time Projection Chamber).

Description of the project:

1. Getting familiar with fragment separators (the ACCULINNA separator).
2. Getting familiar with detectors at the ACCULINNA separator; semiconductor detectors (Si), scintillation detectors (CsI(Ta), stilbene organics crystals).
3. Identification of the fragments generated in heavy ion collisions in the reactions performed at ACCULINNA separator. Simulation of ΔE-E, ΔE-TOF spectra in LISE++ code and comparison with the experimental spectra.
4. Getting familiar with the OTPC (Optical Time Projection Chamber), and the gaseous detector system for the light emission measurements.
5. Measurements of the calibration spectra of the detectors with α, γ and neutron (252Cf) sources.
6. Determination of the best conditions for $n - γ$ discrimination for stilbene detectors.

The main goal of the practice is to make the students to get familiar with the detection techniques of charged particles at low and intermediate energies and neutron detection techniques. During the practice students will work with detectors used at the ACCULINNA separator and measure calibration spectra. They will get familiar with a novel detection technique of charged particles which is applied to the OTPC detector.

Requirements:
Basic knowledge in nuclear physics and heavy ion detection techniques. C++ programming is well seen