

ERASMUS MUNDUS MASTER IN NUCLEAR PHYSICS
Academic Year 2024/2025

MASTER THESIS PROPOSAL

TITLE: Development of positioning algorithm for the STRASSE silicon tracker.

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ABSTRACT

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

STRASSE is a new silicon tracker detector build by TU Darmstadt, LPC Caen and TITech. It aims at reaching sub-millimetric reaction vertex resolution for nucleon removal reactions. This resolution capabilities will allow for (1) Missing Mass spectroscopy of exotic nuclei and (2) High precision gamma-ray spectroscopy at RIKEN. The detector is scheduled to be delivered by end of 2025.

The absolute positioning of all active surfaces of the detector is a key point in reaching the vertex reconstruction resolution. To this end, we propose to study feasibility of positioning using a known reaction and a minimization algorithm. The study will rely on the analysis of Geant4 (Monte Carlo) simulated data.

The project will therefore have element of Geant4 simulation, Root, and C++/Python Analysis. It can lead to a PhD subject on STRASSE data analysis.