

Thesis Topic

**Accelerating Simulations for Astrophysics**

Degree level

Bachelor or Master

Description



ALTO is the name given by the Astroparticle Physics group at the Linnaeus University to a project aiming to build a gamma-ray astronomical observatory at high-altitude in the Southern hemisphere (<https://alto-gamma-ray-observatory.org/>)

Monte Carlo simulations for the project are extremely relevant for making progress in this domain of science. Unfortunately, the execution time of the simulation code is impractically long. This degree project will study and develop methods for making the execution of simulation code faster. It is expected that the code bottlenecks will be identified and code optimizations will be implemented to make simulation code execution faster.

Objectives

The project includes

- Identification of code bottlenecks
- Implementation of code optimizations
- Evaluation of the code execution improvements

Requirements

Knowledge of (or readiness to quickly learn)  
- C/C++ programming language;  
- Parallel programming.

Contact Person

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