Various software for the tasks of experimental nuclear physics

Description: Common tasks in experimental nuclear physics, such as data analysis, for example, necessarily require programming. One of the main tools in this area is ROOT – a C++ toolkit designed for data processing, analysis, visualization and more. If a coding project requires collaborative work involving at least two people, then a version control system is a must – it helps developers to improve the software simultaneously and provides the option to choose the software's version, depending on the needs. Github is the most popular tool for this purpose. For more complicated projects, requiring the use of multiple different types of classes and functions, a CMake is a very handy tool for compiling and building software.

The goal of the practice will be to create a project that will implement all of the aforementioned components to develop a program applicable for the basic needs of ACCULINNA.

Additionally, excursions around the ACCULINNA and some other facilities will be provided.

Aim:
- Learn how to solve basic tasks of experimental nuclear physics, using data analysis framework *ROOT*;
- Learn how to use version control system *git*;
- Learn how to use a build system *CMake*;
- Based on the previous aims, make a project that will be able to process experimental spectra, show the results and so on.

Requirements: Preferably a Linux-based operational systems (e.g. Ubuntu, Debian), basic knowledge of programming (favorably C++), optionally basic knowledge of version control systems (git, Github) and CMake.

Recommended Sources:
- Leo W. Techniques for Nuclear and Particle Physics Experiments: A How-to Approach. Berlin : Springer, 1994;
- ROOT CERN https://root.cern/get_started/;
- CMake https://riptutorial.com/ebook/cmake;
- Github https://githubtraining.github.io/training-manual/#/.

Number of participants: Preferably two students.

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Images: Part of ACCULINNA-2 setup