

THE IMPLEMENTATION OF BOOLEAN LOGIC CONCEPTS IN A LEARNING-BY-DOING PROJECT FOR MEASURING THE EFFICIENCY OF THE DETECTOR MRPCs

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ABSTRACT

The laboratory activities are essential in order to guarantee the student an active and aware participation in learning technical and scientific topics. These also contribute to developing skills to the collaboration and work sharing. At the Fermi High School of Catanzaro (Italy), within the project EEE (Extreme Energy Events), we conducted a laboratory experiment for measuring the efficiency of the MRPCs (Multigap Resistive Plate Chambers)- which are part of the telescope used in the study of cosmic rays. This experiment is an application of the operators of Boolean logic, the concepts of triggers, data acquisition and analysis. The good work done by the students and the fruitful discussions favored the assimilation of new concepts and helped to strengthen organizational and teamwork skills. All this underlines the educational value of this project. In the long run, being involved in a real scientific experiment with the purpose of performing research in an advanced field of investigation, is a way to improve the acquisition of scientific topics and can bring valuable knowledge to students.

Keywords: Detector, efficiency, Boolean logic, students, learning.