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Analyzing cosmic-ray muons in the experimental paths of the "Mathematical High School" Project

Friday, September 16, 2022 12:00 PM (15 minutes)

The Mathematical High School (MHS) Project is a research project involving 160 high schools and 25 Italian universities in which experimental research paths are deepened to explore mathematics as a universal language and as a link between the various areas of both humanistic and scientific knowledge. These activities are developed with the collaboration of internationally recognized research institutions. In particular, in the courses of the schools that collaborate with the MHS research group of the Mathematics Department of the University of Salerno, thanks to the collaboration with INFN (National Institute of Nuclear Physics) of Naples, students are offered laboratory activities of data analysis in the "cosmic ray path". Students, guided by the researchers, use the CRC (Cosmic Rays Cube), a portable muon detector to carry out an experimental activity, from the data taking to the analysis. They study what cosmic rays are, where they come from and, in particular, the characteristics of comic-ray muons produced in the Earth atmosphere. Mathematics becomes the language with which the data collected by the detector are interpreted to reconstruct the muon traces, their flux and their direction. Using dedicated software and calculation software, students experience the activity of the researchers. Working in team they deal with high-profile scientific issues usually not developed in the curricular educational paths.

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