

# Technological semiotic mediators in didactic to approach cosmic rays and improve students' scientific knowledge

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The “Mathematical High School” research project is an extracurricular educational path dedicated to high school students developed by the Department of Mathematics of the University of Salerno (Italy). In this context, an experimental research-laboratory in the field of astroparticle physics was presented in collaboration with the National Institute of Nuclear Physics (INFN) –Napoli Division (Italy). The laboratory activities concerned the analysis of the data detected by the Cosmic Ray Cube (CRC), a muon detector designed in the Gran Sasso (Italy) laboratories together with a dedicated software for the data acquisition, available also for mobile devices. The pandemic emergency due to covid-19 and the consequent closure of schools with the activation of distance learning, led the researchers and teachers involved in the laboratory activities, to re-elaborate and develop the activities in a convenient format for e-learning platforms. The course also pursued to create a bridge between the worlds of research, universities and schools, to aim at creating the necessary synergies needed to stimulate and to activate participation of students, also with the use of the most recent scientific discoveries.

The didactic impact of the activities will be illustrated in this work. It will describe not only the involvement in the development of fascinating topics not usually carried out in Italian curricula, but also the skills acquired thanks to the development of interdisciplinary themes that highlight how the different fields of the scientific world such as mathematics, physics, chemistry, astrophysics, engineering, cooperate for the advancement of knowledge in research.

## Keywords

Technology-enhanced learning; interdisciplinarity; astroparticle physics; mathematics

## Collaboration

## other Collaboration

## Subcategory

Outreach and Education

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