

Titolo: Getting used with a Silicon Photomultiplier (SiPM) to prepare the teaching material for high school student

Description of the activity:

CAEN developed a new dedicated control software for the full control of the system and the data analysis. Through a simple graphical interface, the user can manage all the parameters of both Power Supply, the Amplification Unit and the Digitizer (<https://www.caen.it/products/sp5600an/>). In few easy steps, the user can control the Bias and the Gain of the SiPM and also modify the thresholds and the digital outputs. In a dedicated window, the digitized signals can be monitored for real time fine tuning of the set-up. Energy Spectra, Charge vs time, Counting, Staircase plots and Time Distribution are also displayed. Data analysis is supported by advanced tools implemented in the software itself. Nevertheless, the possibility to save the data to file has been also implemented for further analysis.

The INFN LNL (<https://www.lnl.infn.it>) is equipped with an educational kit premium version, which let students carry out laboratory experience in many fields:

- Gamma Spectroscopy
- Beta Spectroscopy
- Cosmic rays
- Photon detection
- Study of the scintillating materials to absorber materials.

The aim of this work is firstly study and get acquainted with some of the experiments proposed by the educational kit, and afterwards write some tutorials for high school students. These tutorials will be a simplified version of the original experiences with additional material for introducing the topic and to interpreting the spectrum or data analysis. Moreover, the candidate has also to get used to the LNL radioactive sources (gamma, beta, alpha) which will irradiate with the SiPM, following the instructions present in the educational kit.

Period: 7 September - 6 November

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Free lunch at LNL Canteen

LNL Free Guesthouse