

Introduction

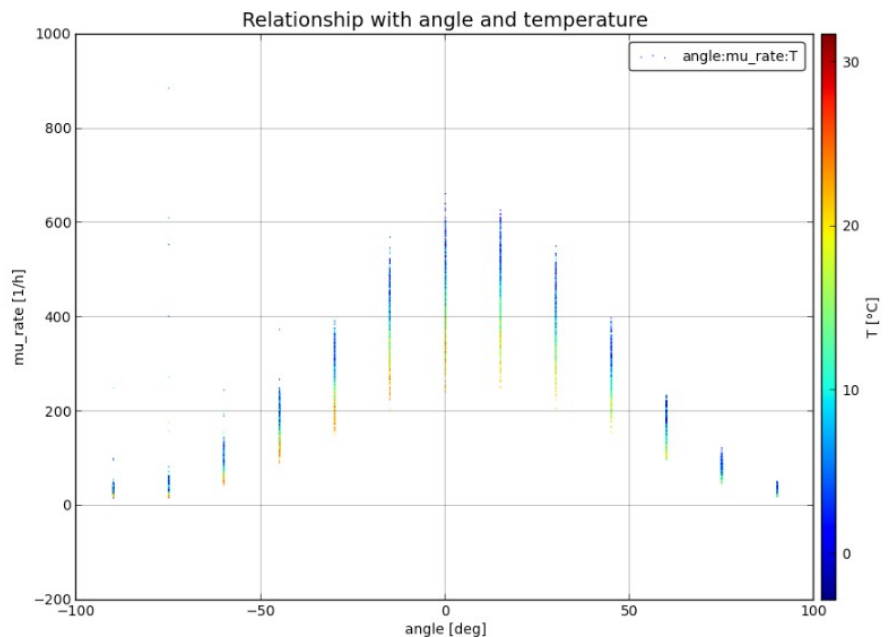
We are some students of a scientific-oriented high school, placed in Olbia, in Sardinia. We are still completing our cosmic ray detector, but we analysed other data from the Cosmic@Web online platform

Experimental Setup

Our detector is made up of two Geiger tubes powered with 400 V and mounted so that they can rotate at different zenithal angles. They are connected to a coincidence circuit that intercepts couples of signals within a little time window. The trigger signals are counted and sent to an oscilloscope and then to a computer. Currently we are working to amplify the signals.

Results

We analysed the CosmoMühle experiment, and we found out that the muon rate increased while getting nearer to a zenithal angle of 0° . We also tried to find a relationship with pressure and temperature. We analysed other experiments, including LIDO and Polarstern, and we noticed that, generally, higher pressures and temperatures corresponded to lower muon rates. We also noticed, while analysing the Polarstern data, that the muon rate is higher the higher is the latitude



Analysis

With the aid of the Cosmic@web booklet we verified that the muon rate is proportional to the \cos^2 of the angle. This can be explained by the shorter path of the muons from the atmosphere to the detector when they come directly from the zenith, and so by the lower energy required to reach the detector. The relationship with pressure and temperature can be explained with the fact that, the higher are these values, the likelier are the atmospheric pions to interact with other particles and so to lose energy before they decay. During the video call, we asked if the relationship with latitude could depend on the magnetic field, and we discovered we were right