

Proposed Use of Quarknet Cosmic Ray Detector for the classroom. 6/27/2008

I have been involved with Quarknet and the UC Santa Cruz center for several years and at this time I feel I am familiar enough with the function and software for the Cosmic Ray Detector to begin using it in my Physics classroom. It has taken a while to get to this point; I have just become fortunate to obtain a 6000 series detector I can use. This past month I found 6 students interested to work after school to assemble and initiate the detectors. I found the group of 3 boys and 3 girls were interested to learn more about particle physics and investigation methods which we had touched on in class. As they worked on the detectors it was easy for them to learn additional physics in this context. The initial particle physics introduction had been in class when they made and used simple cloud chambers which was an eye opening activity for many of the students. The scintillator detectors were one step more abstract and they enjoyed the knowledge they were delving deeper into the unseen world surrounding us.

I plan to use the detector in my class this coming school year again for groups of students motivated to go further in physics. I plan to introduce them to the concepts of the possible experiments that can be done in the classroom (muon count rates at different times of day, muon lifetime, shielding and possibly count rates at different altitudes). After the students become more familiar with the concepts in particle physics I hope they will be able to suggest some of their own questions and experiments.

I am looking forward to utilizing the educational capacities made possible by this reliable detector. One of its benefits is the chance for me to gain insight. A powerful tool such as this helps to bridge the gap between high school and college. The more advanced concepts it helps teach are: exponential decay, error analysis, equipment trouble shooting, ionization, photomultiplier tube function, Cosmic rays, particle acceleration, and scintillation. In general, the chance to investigate things most students did not know existed is a powerful step forward in their education and imagination.

Thank you for your consideration,

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