

Cosmic Ray Detectors

“The heavens declare the glory of God; the skies proclaim the work of His hands.” (Ps. 19:1) Throughout the past centuries, scientists and astronomers have discovered how completely true the Psalmist’s words really are. Some of the largest new discoveries have been in the realm of particle physics – studying the incredibly tiny particles that make up atoms and nuclides. These particles make up what scientists have come to call “cosmic rays.”

Nobody really knows where cosmic rays come from. The generally accepted theory is that these rays come from rotating neutron stars, which shoot out protons at extremely high energies. The protons then speed through the universe until they reach the earth’s atmosphere. At this point, the protons collide with subatomic particles such as pions and mesons. This causes the particles to break into muons, which fly toward the earth.

These muons can be detected using cosmic ray detectors. The detectors use scintillation plastic, which emits light when a muon passes through it. The light is turned into an energy pulse by a special piece of equipment, and the energy pulse is fed to an oscilloscope, which plots the data it receives. Many interesting experiments can be done with this cosmic ray detector, which can help us understand the rays.

The QuarkNet program brings cosmic ray detectors to high school students. I think that the QuarkNet thing really can help students understand a lot more about the universe around them and give them a greater understanding about what is going on in popular science. I really enjoyed the presentation and thought that the idea of cosmic rays was incredibly fascinating, especially since I didn’t know about them before.