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Cosmic Rays - A Word-Wide Student Laboratory

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The QuarkNet program has distributed hundreds of cosmic ray detectors for use in high schools and research facilities throughout the world over the last decade. Data collected by those students has been uploaded to a central server where web-based analysis tools enable users to characterize and to analyze everyone's cosmic ray data. Since muons rain down on everyone in the world, all students can participate in this free, high energy particle environment. Through self-directed inquiry students have designed their own experiments: exploring cosmic ray rates and air shower structure; and using muons to measure their speed, time dilation, lifetime, and affects on biological systems. We also plan to expand our annual International Muon Week project to create a large student-led collaboration where similar cosmic ray measurements are performed simultaneously throughout the world.