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Diurnal Variation in Cosmic Rays[1] LINDSAY YATSUHASHI, FIONA WILLETTE, TOMOHIKO NARITA, College of the Holy Cross — A diurnal variation is the change in the amount of cosmic rays that reach Earth throughout the day. Due to the Sun's rotation and magnetic field, we expect to see more muons during the daytime and less muons, and therefore less cosmic rays, during the nighttime. Observing muons over many days allows us to look for these diurnal variations in cosmic rays. Cosmic rays are high energy particles that move at the speed of light and create a shower of muons and electrons when colliding with atoms in Earth's atmosphere. The muons that reach Earth's surface can be detected with a telescope composed of a scintillator and a photomultiplier tube. These telescopes record the number of muons that pass through, as well as the time each muon came through, and we can observe cosmic rays by observing the muons. By observing the muons for many days, we can look for diurnal variations in cosmic rays. From our experiments, we did not find evidence of a diurnal variation in cosmic rays.

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