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Using Inexpensive Muon Telescopes for Advanced Lab Experiments[1] BRETT FADEM, Muhlenberg Coll — In a recent article by Axani, Conrad, and Kirby, *The desktop muon detector: A simple, physics-motivated machine- and electronics-shop project for university students*, American Journal of Physics 85, 948 (2017) instructions for building inexpensive muon counters are provided. These counters utilize silicon photomultipliers (SiPMs) a technology that is increasingly prevalent in high energy and nuclear physics experiments. This talk will detail attempts to craft advanced laboratory activities using both the original designs and modifications to those designs. In particular, activities involving the measurement of muon rates as a function of angle from the zenith will be discussed. In addition, activities designed to guide students in developing computer simulations to better understand the angular dependence of the rates will be described. Finally, progress in reproducing the classic muon lifetime experiment with SiPM based detectors will be discussed.

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