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Low-cost and modular cosmic ray telescope development and the associated applications XIAOCHUN HE, CAROLA BUTLER, SAWAIZ SYED, Georgia State University, TING-CUN WEI, Northwestern Polytechnical University — A state-of-the-art portable, low-cost, and modular cosmic ray muon and neutron detector prototype has been developed at Georgia State University for the simultaneous measurement of cosmic ray muon and neutron flux. The detector consists of three layers of plastic scintillator and a neutron-cell with liquid scintillator mounted on an extruded aluminum frame. The scintillation light is collected through embedded wavelength shifting fibers which are coupled to silicon photomultipliers (SiPM). The data acquisition (DAQ) system of this detector consists of a Raspberry PI and a custom-made SiPM interface board. One of the applications of this detector is to study the correlation between the flux variations and the space/earth weather at global scale by installing arrays of this detector around the world. It could also be modified for extensive air shower measurements. In the talk, we will present the details of the detector design and the initial test results from multiple detector prototypes.

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