Abstract Submitted
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Crest: A Balloon-borne Instrument to Measure Cosmic-ray Electrons above TeV Energies[1] S. NUTTER, Northern Kentucky University, T. ANDERSON, S. COUTU, M. GESKE, Pennsylvania State University, C. BOWER, J. MUSSER, Indiana University, D. MULLER, N. PARK, S. WAKELY, University of Chicago, M. SCHUBNELL, G. TARLE, A. YAGI, University of Michigan — The flux of high-energy (>1 TeV) electrons provides information about the spatial distribution and abundance of nearby cosmic ray sources. CREST, a balloon-borne array of 1024 BaF2 crystals viewed by PMTs, will measure the spectrum of multi-TeV electrons through detection of the x-ray synchrotron photons generated as the electrons traverse the Earth's magnetic field. This method naturally discriminates against the proton and gamma ray backgrounds, and achieves very large detector apertures, since the instrument need only intersect a portion of the kilometers-long line of photons and not the electron itself. Thus CREST's acceptance is several times its geometric area up to energies of 50 TeV, ∼10 times higher in energy than ground based techniques can reach. This measurement will overlap the recent HESS results and extend to higher energies. CREST is scheduled to fly in a long duration circumpolar orbit over Antarctica in 2010. An overview of the detector design and status will be presented.

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