Abstract Submitted
for the APR12 Meeting of
The American Physical Society

Radar Detection of Cosmic Rays ISAAC MYERS, University of Utah, TARA COLLABORATION — Progress in the study of high energy cosmic ray physics is limited by low flux. In order to collect substantial statistics above 10^{19} eV, the two largest ground arrays currently in operation cover 800 km^2 (Telescope Array, Utah) and 3000 km^2 (Auger Observatory, Argentina). The logistics and cost of an order-of-magnitude increase in ground array aperture is prohibitive. In the literature, radar detection experiments have been proposed but substantial results have not been reported. We have deployed a low-power (1500 W) bistatic radar facility overlapping the Telescope Array (TA) in Delta, Utah. Data acquisition systems for the radar receivers were developed in parallel. This system has taught us a great deal, but our current focus is building and deploying a 40 kW transmitter and new high-gain transmitting antenna. Theoretical simulations of CR air shower scattering of radar show that coincidences with the ground array should be detected with this new system. An FCC license for the new transmitter/antenna has been obtained. Systems monitoring and data logging systems, as well as a new, intelligent self-triggered DAQ continue to be developed. We hope to deploy the self-triggered DAQ during the first few months of 2012 and complete the transmitte

Isaac Myers
University of Utah

Date submitted: 10 Jan 2012 Electronic form version 1.4