

Cosmic Ray Detection at the Murchison Radio-astronomy Observatory –a pathfinder for SKA-Low

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We present the status of cosmic-ray detection activities at the Murchison Radio-astronomy Observatory. Using 128 antennas of the Murchison Widefield Array radio telescope in its extended configuration, we detect the radio emission from extensive air showers in the 122-154 MHz range at a rate of slightly less than once per hour, each with an approximate energy of 10^{17} eV. We have developed a bespoke filter inversion to obtain high-time-resolution data from this general-purpose astronomy instrument, and trigger data capture directly from the radio signal. Our future plans include the implementation of a particle-triggered mode, and expanded operations with the low-frequency component of the Square Kilometre Array, which will have ~100,000 antennas deployed on the same site.

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other Collaboration

Subcategory

Experimental Results

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