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Radio Detection of Extended Air Showers at the Pierre Auger Observatory

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The Pierre Auger Observatory explores the potential of radio detection techniques to measure extensive air showers (EAS) induced by ultra-high energy cosmic rays. To study in detail the mechanisms responsible for radio emission in the MHz range, the Auger Engineering Radio Array has been installed at the Observatory. Presently consisting of 24 radio-detection stations, this number will grow to 150 units covering an area of almost 20 km^2. Novel detection techniques based on the GHz emission from the EAS are currently being studied. AMBER (Air-shower Microwave Bremsstrahlung Experimental Radiometer) and MIDAS (Microwave Detection of Air Showers) are prototypes for a large imaging dish antenna. In EASIER (Extensive Air Shower Identification using Electron Radiometer), the microwave emission is detected by antenna horns located on each surface detector. MIDAS is a self-triggering system while AMBER and EASIER use the trigger from the Auger detectors to record the emission.The status of these radio detection R&D efforts at the Pierre Auger Observatory will be reported.

for the collaboration

Pierre Auger Collaboration

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