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The Giant Radio Array for Neutrino Detection - experimental status and plans

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The Giant Radio Array for Neutrino Detection (GRAND) is a next-generation observatory aiming to discover the sources of ultra-high-energy cosmic rays (UHECRs) through the detection of radio signals emitted during the interaction of the UHE particles with the atmosphere. This goal would be achieved by deploying 200,000 radio antennas over 200,000 km2 distributed worldwide, gathering enough UHE neutrino, cosmic ray and gamma-ray events to pinpoint UHECRs origin. The use of a sparse array of antennas would allow achieving statistics far beyond what is accessible to the current experiments at an affordable cost. Today, two GRAND prototype arrays, GRANDProto300 in China and GRAND@Auger in Argentina, constitute testbeds for the fully autonomous system of triggering on the radio signals and reconstructing parameters of very inclined air showers from radio data only. Both arrays have their first antennas deployed and are gathering data, with the search for first UHECRs ongoing. We will show simulations, detection methods, and the first results obtained with the currently operating detectors.

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