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The study of cosmic rays with energies greater than 5 EeV by radio method

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Since 1986, regular measurements of radio emission generated by air shower relativistic particles have been started at the Yakutsk array. As a result of studying the noise background on the array region, a frequency of 30-35 MHz was chosen with minimal radio noise. Showers with energies greater than 10 EeV were registered at the array. For the first time, radio emission in showers with energies greater than 100 EeV was registered at the Yakutsk array. A joint study of charged particles, Cherenkov light, and radio emission showed that the amplitude of the radio signal is proportional to the energy of the shower, and the shape of the spatial distribution of radio emission at sea level is associated with the maximum development of the shower particle cascade. Based on these characteristics, using calculations of the QGSjetII-04 model, an estimate was made of the atomic weight of primary particles that produced air showers with highest energies.

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