Contribution ID: **257**   Type: **Poster**

The Tunka Radio Extension (Tunka-Rex) −Radio Measurements of Cosmic Rays in Siberia

Friday, 29 May 2015 10:00 (0 minutes)

The Tunka observatory is located close to Lake Baikal in Siberia, Russia. Its main detector, Tunka-133, is an array of photomultipliers measuring the Cherenkov light emitted by cosmic-ray air showers. It is used to study cosmic rays up to energies of approximately 1 EeV, which is the energy range of the assumed transition from galactic to extra-galactic cosmic rays. The Tunka Radio Extension (Tunka-Rex) started operation in October 2012. It currently consists of 44 antennas distributed over an area of approximately 1 km². Tunka-Rex measures the radio emission of the same air showers, which are also detected by Tunka-133 and Tunka-Grande, a scintillator extension installed at the site in 2014. Tunka-Rex has mainly three goals: First, the demonstration that radio arrays can be economic. This is achieved by adapting the detection technique to the existing infrastructure at the site. Second, the cross-calibration with the air-Cherenkov measurements, and the determination of the precision for the energy and mass of the primary cosmic-ray particles. Third, cosmic-ray physics at energies close to 1 EeV, where the standard Tunka analysis is limited by statistics. In contrast to the air-Cherenkov measurements, radio measurements are not limited to dark nights with good weather and, therefore, can provide an order of magnitude higher event rate at this energy.

Collaboration

Tunka-Rex Collaboration

Primary author: Dr SCHRÖDER, Frank G. (Karlsruhe Institute of Technology (KIT))

Co-author: TUNKA-REX, Collaboration (Tunka site, Siberia)

Presenter: Dr SCHRÖDER, Frank G. (Karlsruhe Institute of Technology (KIT))

Session Classification: Detector Techniques for Cosmology, Astroparticle and General Physics - Poster Session

Track Classification: S8 - Detector Techniques for Cosmology, Astroparticle and General Physics