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The TAIGA Experiment Status and Results

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TAIGA (Tunka Advanced Instrument for Gamma-ray and cosmic ray Astrophysics) aims at covering the TeV to PeV energy range, where the long-sought Pevatrons can be detected. To this end, TAIGA is implementing a hybrid detection technique for Extensive Air Showers (EAS) from the TeV to PeV energy range with good spectral resolution. Currently the hybrid TAIGA detector combines two wide angle shower front Cherenkov light sampling timing arrays (HiSCORE and Tunka-133), two ˜ 4m class, ˜10° aperture Imaging Air Cherenkov Telescopes (IACTs) and ˜ 240 m² surface and underground charged particle detector stations. Our goal is to introduce a new hybrid reconstruction technique, combining the good angular and shower core resolution of HiSCORE with the gamma-hadron separation power of the imaging telescopes. This approach allows to maximize the effective area and simultaneously to reach a good gamma-hadron separation at low energies (few TeV). At higher energies, muon detectors are planned to enhance gamma-hadron separation. During the commissioning phase of the first and second IACT, several sources were observed. First detections of known sources with the first telescope show the functionality of the TAIGA IACTs. Here, the status of the TAIGA experiment will be presented, along with first results from the current configuration.

Primary authors: TLUCZYKONT, Martin; TAIGA COLLABORATION

Presenter: TLUCZYKONT, Martin

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