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The TAIGA experiment - current status, recent results and development prospects.

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The TAIGA experiment current status, recent results and development prospects are presented. The TAIGA observatory addresses ground-based gamma-ray astronomy at energies from a few TeV to several PeV, as well as cosmic ray physics from 100 TeV to several EeV and astroparticle physics. Presently the pilot TAIGA-1 complex includes integrating air Cherenkov TAIGA-HiSCORE array with 120 wide-angle optical stations distributed over on area 1 square kilometer about and three the 4-m class Imaging Atmospheric Cherenkov Telescopes of the TAIGA-IACT array. To study the entire energy range available for observation, the TAIGA experiment uses three modes of detecting EAS from gamma-rays. Stand-alone mode is used to detecting gamma-rays with energies of more than 2-3 TeV with only one IACT. To detect gamma-rays with energies above 10 TeV, it is possible to use a stereo mode, when - EAS is detected by two or more IACTs. The hybrid mode is to use joint data obtained with the help of IACTs and HiSCORE stations. In this approach, the reconstruction of the energy of the primary particle, the direction and core position is carried out by analyzing the data of the HiSCORE and IACTs data ate used for the gamma/hadron separation. During the next three years, 2 more IACTs with a mirror diameter of 4 m will begin to work. To increase array the effective area for the energy above 300 TeV up to 2 km^2, 10 - 15 stations of the TAIGA-HiSCORE array will be installed outside the border of TAIGA-HiSCORE array.. The further aim is to create a complex TAIGA-100, 100 km^2 area, for the study of the origin of cosmic rays in the energy range of 0.1-10^4 PeV, by detecting gamma-rays in the TeV-PeV energy range.

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