PROCEEDINGS OF SCIENCE

Combined approach to VHE gamma-ray astronomy at the TAIGA observatory

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The TAIGA experiment is aiming to address important tasks in ground-based gamma-ray astronomy at energies from a few TeV to several PeV. TAIGA combines almost all the techniques for gamma-ray air shower detection:

1. First, an array of imaging air Cherenkov telescopes (one telescope already operating and two more to be added at the distance of 600–800 m from each other by 2019).
2. Second, an array of wide-angle Cherenkov timing detectors (currently 43 detector stations; up to 110 stations covering an area of 1 km^2 in 2018).
3. Finally, an array of muon detectors covering a total area of 1 km^2 with a detection area of $\sim$200 m^2 by 2019 and up to 3000 m^2 in the longer term.

Shower parameters are estimated using data of wide-angle Cherenkov timing detectors, whereas the selection of gamma-ray induced showers is based on the images of the telescopes taking into account shower parameters as well as muon array data.
Low investment coupled with high sensitivity ($2.5\cdot10^{-13}$ TeV/(cm^{2}sec) for 300 h of local sources observation at 100 TeV, 1 km^2 array) makes this pioneering approach very attractive for exploring the galactic PeVatrons.
The status and perspectives of the project as well as first results of the prototype phase are reported.

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