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The Stereo Event Builder of the ASTRI Mini-Array

The ASTRI Mini-Array is an international project led by the Italian National Institute for Astrophysics (INAF) which is in the process of deploying nine Imaging Atmospheric Cherenkov Telescopes (IACTs) of the 4-m class at the Observatorio del Teide in Tenerife (Spain). The project is designed to detect very high-energy gamma rays up to the multi-TeV scale. Upon completion it will be for some time the largest IACT array in operation both in terms of number of telescopes and of ground surface area. The first telescope of the array, named ASTRI-1, is now in its commissioning phase; the second telescope is being installed at the site, and by the end of 2025 a sub-array of three telescopes should become operational. The ASTRI Mini-Array operation concept is based on the stereoscopic technique, i.e. the detection of the same atmospheric shower event with two or more telescopes; all single-telescope events data are acquired independently and stored for off-line processing.

The Stereo Event Builder (SEB) software system, i.e. the part of the off-line data processing chain that is responsible for identifying single and stereo Cherenkov events, will become of fundamental importance as soon as multiple telescopes will be operational. In this contribution we present the SEB design and expected performance; simulation results will be interpreted considering the data acquired during the commissioning phase.

Collaboration(s)

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