

STACEX: RPC-based detector for a multi-messenger observatory in the Southern Hemisphere

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Extensive Air Shower (EAS) arrays are survey instruments able to monitor continuously all the overhead sky. Their wide field of view (about 2 sr) is ideal to complement directional detectors by performing unbiased sky surveys, by monitoring variable or flaring sources, such as AGNs, and to discover transients or explosive events (GRBs).

With an energy threshold in the 100 GeV range EAS arrays are transient factories.

All EAS arrays presently in operation or under installation are located in the Northern hemisphere. A new survey instrument located in the Southern Hemisphere should be a high priority to monitor the Inner Galaxy and the Galactic Center.

STACEX is the proposal of a hybrid detector with ARGO-like RPCs coupled to Water Cherenkov Detectors (WCDs) mainly to lower the energy threshold at 100 GeV level.

In this contribution we introduce the possibility of improving the low energy sensitivity of survey instruments by equipping RPCs, which were proved to be optimal detectors at 100 GeV energies by the ARGO-YBJ Collaboration, with WCDs.

An EAS detector with high sensitivity between 100 GeV and 1 TeV would be a valuable complementary transient detector in the CTA era.

Author: DI SCIASCIO, giuseppe (INFN Roma Tor Vergata)

Presenter: DI SCIASCIO, giuseppe (INFN Roma Tor Vergata)

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