



Contribution ID: 42

Type: Poster

## SAG-SCI: the Real-time, High-level Analysis Software for Array Control and Data Acquisition of the Cherenkov Telescope Array Observatory

The Cherenkov Telescope Array Observatory (CTAO) is going to be the leading observatory for very-high-energy gamma rays over the next decades. Its unique sensitivity, wide field of view, and rapid slewing capability make the CTAO especially suited to study transient astrophysical phenomena. The CTAO will analyse its data in real time, responding to external science alerts on transient events and issuing its own. The Science Alert Generation (SAG) automated pipeline, a component of the Array Control and Data Acquisition (ACADA) software, is designed to detect and issue candidate science alerts.

In this work, we present the current development status of SAG-SCI, the ACADA component responsible for the real-time, high-level analysis of CTAO data. The SAG-SCI pipelines receive gamma-ray data from multiple reconstruction lines, merge it, store it in a database, and trigger several parallel scientific analyses on the latest data. These analyses include estimating target significance and flux, producing sky maps and light curves, and conducting blind searches for sources within the field of view. We execute SAG-SCI on a set of simulated gamma-ray data, detecting the simulated sources and accurately reconstructing their flux and position. We also estimate the systematic errors introduced by the analysis and discuss the results in relation to the generation of candidate science alerts.

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**Session Classification:** PO-2

**Track Classification:** Gamma-Ray Astrophysics