

Deep Learning Transient Detection with VERITAS

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What is this contribution about?

This contribution presents the implementation of a data-driven deep-learning based transient detection method for VERITAS.

Why is it relevant / interesting?

Imaging Air Cherenkov telescopes provide insights to very-high-energy transient signals such as evaporation of primordial black holes, gamma-ray bursts or flaring blazars. The identification of such events requires a robust blind search method.

What have we done?

We developed a pipeline to generate the required inputs to the deep-learning method. We investigated influences to the data to determine auxiliary parameters and meta bins to obtain a robust performance under different observing conditions. We illustrate our method on an historic flare of the blazar BL Lac in the scenario of a possible follow-up observation.

What is the result

Overall the results are compatible with the significance achieved by traditional detection methods, considering a single reflected background region. The results for short timescales are promising, which can be critical for the fast detection of transient signals.

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