Contribution ID: **22** Type: **not specified**

A New Intelligent LHAASO: Pushing the Limits of AI for High-Energy Astronomy

Thursday, 21 August 2025 12:00 (20 minutes)

The Large High Altitude Air Shower Observatory (LHAASO) stands at the forefront of high-energy astronomy, with core physics goals including the identification of galactic PeVatrons, indirect dark matter searches, and cosmic ray origin studies. However, achieving these objectives is challenged by the critical need to process data streams while maintaining real-time background rejection and precise angular resolution to high-energy sources. In this report, we aim to enhance LHAASO’ s fundamental performance using AI. We test several distinct model architectures, discuss the origins of performance differences, and probe the boundaries of AI capabilities within LHAASO’s data.

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Session Classification: Session