



Contribution ID: 3

Type: **Talk**

## Optimizing a Cosmic-ray Energy Estimator with Machine learning for the HAWC observatory (Remote)

*Thursday, 30 January 2025 15:00 (20 minutes)*

Situated at an elevation of 4,100 meters a.s.l. in Puebla, Mexico, the High-Altitude Water Cherenkov (HAWC) gamma-ray observatory detects TeV gamma-rays from astrophysical sources. Additionally, it gathers substantial data on hadronic air showers, expanding HAWC's research capabilities to explore cosmic rays with energies from 1 TeV to 1 PeV. The initial energy estimation method optimized for cosmic rays enabled the analysis of the anisotropy and composition of the cosmic rays. However, recent improvements in HAWC reconstruction algorithms have pointed out the need for an improved energy estimator of hadronic EAS. To this end, it is important to explore more sophisticated methods for cosmic-ray energy reconstruction. In this work, we present preliminary results of the implementation of machine learning techniques for predicting the energy of cosmic-ray-induced events in HAWC.

### Type of Contribution

talk

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