

# Machine Learning Techniques for Shower Discrimination in Space-Based Calorimeters for Cosmic Ray Studies

*Wednesday 28 May 2025 10:45 (15 minutes)*

We present a machine learning approach for discriminating electromagnetic and hadronic showers in simulated data from a high-granularity LYSO space-based calorimeter. Two feature sets were explored: Vision Transformers were trained on the spatial coordinates and deposited energy of activated pixels, while XGBoost classifiers used reconstructed variables such as lateral and transverse moments and longitudinal profiles. The results show that both methods offer complementary insights, highlighting the potential of combining raw and physics-informed features for improved shower classification in cosmic ray studies.

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**Session Classification:** WP3