

Fourth MODE Workshop on Differentiable Programming for Experiment Design



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Development and explainability of models for machine-learning-based signal reconstruction

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Machine learning methods are being introduced to all stages of data reconstruction and analysis in various high energy physics experiments. We present the development and application of convolutional neural networks with modified autoencoder architecture. These networks are aimed at reconstructing the pulse arrival time and amplitude in individual scintillating crystals in the PADME experiment detectors. The network performance is discussed as well as the application of xAI methods for further investigation of the algorithm and improvement of the output accuracy.

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