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# Application of artificial intelligence in the reconstruction of signals from the PADME electromagnetic calorimeter

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PADME experiment at LNF-INFN is devoted to the search for the associate production of new light particles using accelerated positrons which annihilate in a thin active diamond target.
The core of the experiment is an electromagnetic calorimeter made of 616 BGO crystals which is dedicated to the measurement of the energy and the position of the final state photons.
The high beam particle multiplicity over a short bunch duration requires reliable identification and measurement of overlapping signals. A regression machine learning based algorithm was developed to disentangle close-in-time events with high efficiency and precisely reconstruct the amplitude of the hits and their time with a sub-nanosecond resolution.
The performance of the algorithm and the sequence of improvements leading to the achieved results will be presented and discussed.

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