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Sparse CNNs for Particle ID in ProtoDUNE-SP CARLOS SARASTY SEGURA, University of Cincinnati — The Deep Underground Neutrino Experiment (DUNE) will use the liquid argon time projection chamber (LArTPC) technology. LArTPC detectors can collect high-resolution data of charged particles' trajectories. An example of this type of detector is ProtoDUNE-SP that is the prototype of the single-phase DUNE far detector using full-scale components and a charged-particle beam that allows measuring the detector's calorimetric response to hadronic particles and electromagnetic showers. The Convolutional Neural Networks has been developed and employed in the analysis of scientific data from the protoDUNE detector, which exploit the advantages of a liquid argon time projection chamber (LArTPC). Despite the high-resolution images and the fine details that the detector can capture, the classification of the different types of particles and interactions is still a challenge. With this motivation, we present the details of an algorithm capable of generating a pixel-level label for supervised training using Sparse Convolutional Neural Networks.

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