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Aligning the MATHUSLA Detector Test Stand with Tensor Flow

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MATHUSLA has been proposed as a detector that sits over 100 m from an LHC interaction point, on the surface, to look for ultra long-lived particles. A test stand was constructed with two layers of scintillator paddles and six layers of RPCs, on loan from the DZERO and the Argo-YBJ experiments. Downward and upward going tracks from cosmic ray data and muons from the interaction point have been reconstructed. To align the detector we have used a large sample of tracks and done a simultaneous fit to find the location of the detectors and the track parameters themselves. We used TensorFlow to drive the fit and align the detector. Previous work directly translated C++ code into TensorFlow primitives. In this updated work we have moved towards more fully using TensorFlow primitives as well as the GPU capabilities of TensorFlow. All aspects of this work will be discussed, including the effort to move away from the C++ structured code to the TensorFlow tensors and more powerful primitives.

Consider for promotion

No

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