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Photon Angle Reconstruction with Machine Learning MELISSA HUTCHESON, Univ of Michigan - Ann Arbor, KOTO COLLABORATION COLLABORATION — The KOTO experiment at the J-PARC research facility in Tokai, Japan aims to observe and measure the rare decay of the neutral kaon, $K_L^0 \to \pi^0 \nu\bar{\nu}$. The signal signature is two photons from the neutral pion decay and the two neutrinos are not seen by the KOTO detectors. The photons are captured by a Cesium Iodide (CsI) electromagnetic calorimeter and the position and energy of the hits are recorded. Due to kinematic constraints, the origin of the photons cannot be known for certain. As a result, photons that come from off-axis particle interactions and decays become a background. This work uses machine learning neural network techniques to obtain the incident angles of the photons based on the transverse shower profiles in the calorimeter. This talk will focus on the details and results of the photon angle reconstruction with neural networks.

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