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GNN Tracking at the DarkSHINE Experiment Searching for Dark Photons in the Visible Decay Channel

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DarkSHINE is an electron-on-target experiment proposed to search for light dark matter. In this talk, we present the application of Graph Neural Networks (GNN) for the tracking and vertex reconstruction in the proposed DarkSHINE experiment with full simulation samples. Compared to the traditional Kalman Filter method, GNN method doubles the signal efficiency while significantly reducing the computation time. Signal sensitivities have been studied based on the GNN Tracking performance.

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