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Advanced deep-learning applications in neutrino physics

Deep learning is playing an increasingly important role in particle physics, offering powerful tools to tackle complex challenges in data analysis. This talk presents a range of advanced deep-learning techniques applied to neutrino physics, with a particular focus on the T2K experiment. The discussion includes the use of cutting-edge models such as transformers, domain adaptation strategies like contrastive learning, and anomaly detection methods. These approaches have been employed to improve neutrino interaction identification and enhance the reconstruction of particle kinematics. By integrating these techniques, we aim to refine data analysis pipelines, boost measurement precision, and gain deeper insights into neutrino properties.

AI keywords

transformers; domain adaptation; anomaly detection

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Track Classification: Patterns & Anomalies