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## Online Electron Reconstruction at CLAS12

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Online reconstruction is key for monitoring purposes and real time analysis in High Energy and Nuclear Physics (HEP) experiments. A necessary component of reconstruction algorithms is particle identification (PID) that combines information left by a particle passing through several detector components to identify the particle's type. Of particular interest to electro-production Nuclear Physics experiments such as CLAS12 is electron identification which is used to trigger data recording. A machine-learning approach was developed for CLAS12 to reconstruct and identify electrons by combining raw signals at the data acquisition level from several detector components. This approach achieves a high electron identification purity whilst retaining a 99.95% efficiency. The machine learning tools are capable of running at high rates exceeding the data acquisition rates and will allow electron reconstruction in real-time. This framework can then be expanded to other particle types. This work enhances online analyses and monitoring at CLAS12. Improved electron identification in the trigger also contributes to the reduction in recorded data volumes and improves data processing times. This approach to triggering will be employed when transitioning to higher luminosity experiments at CLAS12 where the data volume will increase significantly.

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