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Simulating Calorimeter Detector Signatures with the Lorenzetti Showers Framework for Electron Trigger Studies using Machine Learning

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The general-purpose Geant4 based calorimeter framework Lorenzetti Showers is being presented. It provides an ideal tool for simulating various configurations of calorimeter systems or testing their responses in complex scenarios. Its limits are being investigated by simulating a system very close to the ATLAS calorimeters and comparing their signatures under challenging conditions. Such a study is presented where forward calorimeter signatures are used for triggering on electrons with machine learning techniques where no tracking information is available. Those scenarios become even more challenging in extreme pile-up situations which are aimed to be recreated with Lorenzetti Showers to extend the studies.

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