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Towards Fast Calibration with the ePIC Barrel Hadronic Calorimeter

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Measurement of jets and their substructure will provide valuable information about the properties of the struck quarks and their radiative properties in Deep-Inelastic Scattering events. The ePIC Barrel Hadronic Calorimeter (BHCal) will be a critical tool for such measurements. By enabling the measurement of the neutral hadronic component of jets, the BHCal will complement the Barrel Electromagnetic Calorimeter (BECal) and the ePIC tracking system to improve our knowledge of the jet energy scale. However, to obtain a physically meaningful measurement, the response of the combined BECal + BHCal system must be properly calibrated using information from both. With Machine Learning, this can be done in such a way that is both computationally efficient and easy to deploy in a production environment, making such an approach ideal for quasi-real time calibrations needed in a streaming readout environment. We present a potential machine-learning based algorithm for fast calibration of the combined system which could be deployed in such an environment and discuss progress towards its implementation.

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