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Calibration of the ATLAS EM Calorimeter using W, Z, and J/psi to ee events

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For particle and jet energies above a few GeV, calorimeters provide the most precise measurements. Thus, calibration of the calorimeters is crucial to achieve those physics goals that are dependent on the energy resolution and scale. For the ATLAS EM calorimeter, the strategy is to obtain a global constant term that is less than 0.7\%. Information from test beams and the hardware calibration should ensure a local term that is less than 0.5\% over regions of size $\Delta\eta \times \Delta\phi = 0.2 \times 0.4$. Several physics channels are used to intercalibrate the 384 regions of size $\Delta\eta \times \Delta\phi = 0.2 \times 0.4$ to within 0.5\% in order to achieve the desired global constant term. During early data taking, electrons from W bosons will be used to develop a relative calibration in ϕ since there will be a factor of 10 more in statistics as compared to the number of Z bosons. The measurements from W and Z will be combined to improve the constant term. To fix the scale in the low energy domain, electrons from J/ψ decays will be used. A framework has been developed to use electrons from Z, W and J/psi to ee events to intercalibrate the EM calorimeter. In this talk details of the framework, different methods used for intercalibration using the above three physics channels, the performance of the framework, and some systematics uncertainties will be reported.

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