A jet is a collection of objects produced by the hadronization of a parton (quark or gluon). They are constructed from topological clusters in the detector in order to re-create the initial parton from the collision. The set of corrections applied to the jets constitutes the Jet Energy Scale (JES). This corrections are based on simulation and data. This poster describes the steps of the JES and the uncertainties on the JES and JER.

**JETS - EM scale**
- Energy is deposited on the calorimeter cells
- Topo-clusters are derived from the cells
- Clusters are calibrated at EM or LCW scale
- The jet is a collection of clusters in a cone
- Additional corrections are applied (JES)

**Origin correction**
Changes the jet direction from the origin to the primary vertex. Does not affect the energy.

**Pile up correction**
Jet areas correction: estimates the pileup density and corrects the jet according to its area
Residual correction: removes npv and $\langle\mu\rangle$ dependences

**Absolute EtaJES**
- Energy correction using truth jets from simulation
- Eta correction from the detector effects

**Global Sequential Calibration**
is a set of corrections that reduce the JES dependence from the initial parton

**GSC**

**In-situ correction**

**JES Uncertainties**

**JER Uncertainties**

The Jet Energy Resolution is defined as the standard deviation of the Gaussian fit to the jet response distribution.

**ATLAS Simulation Preliminary**
- Pythia Dijet $\sqrt{s}=13$ TeV
- anti-$k_T$, EM jet $R=0.4$ 
- $E_T > 20$ GeV

**ATLAS Preliminary**
- $\sqrt{s}=8$ TeV, 2012
- $\sqrt{s}=13$ TeV, 2015
- $\sqrt{s}=3.2$ TeV, 2015
- $\sqrt{s}=8$ TeV, 2013

**ATLAS Preliminary**
- $\sqrt{s}=13$ TeV, 2015
- $\sqrt{s}=8$ TeV, 2012

**ICHEP Poster Session - Chicago - August 3 – 10, 2016**