

# Table of Contents

<b>Calibrating a detector for SLIC.....</b>	<b>1</b>
Fast Monte Carlo Files.....	1
Reconstruction Files.....	1
Digisim.....	1
Calorimeter Sampling Fractions.....	1
Calibration Files.....	1

# Calibrating a detector for SLIC

This is a description of how to calibrate a detector starting from compact.xml. This page is based on this tutorial [↗](#).

## Fast Monte Carlo Files

- use `lcdtrk` [↗](#) to create the covariance matrices for track smearing. This requires requires an input file (`in.lcdtrk`) which defines the detector geometry. The outputfiles have to be renamed and moved to:
  - ◆ `TrackParameters/FullBarrelResolutionBc.ini`
  - ◆ `TrackParameters/FullBarrelResolutionNbc.ini`
- All the other files can be just copied in the most cases. The files needed are:
  - ◆ `Cheating.properties`
  - ◆ `ClusterParameters.properties`
  - ◆ `detector.properties` (just the detector name)
  - ◆ `IEfficiency.properties`
  - ◆ `SimpleTrack.properties`
  - ◆ `TrackParameters.properties`

## Reconstruction Files

### Digisim

The `digisim.steer` file can usually be copied. It provides the timing and threshold for the calorimeters and must be adjusted if the calorimeter readout is changed.

### Calorimeter Sampling Fractions

These are produced for each calorimeter in the detector using `QSFCalibrationFromData.java` (in `org.lcsim`). Typically this code is run over 10k qq events per energy for different energies: 100,200,500 GeV for the ILC case and additionally 1,2,3 TeV for the CLIC case. The `QSFCalibrationFromData` maybe has to be adjusted, since some things are hard coded:

- `nevtmax` - the maximum number of events (e.g. 10k)
- arrays of strings of calorimeter hit collection names
- `cind` - weights of calorimeter hits (ECals counted double)
- `digital` - array of bools, defining which calorimeters are read out digitally
- `workdir` - path of output files

### Calibration Files

The photon and hadron calibration is done using `QCalibrationFromData.java`. This code uses the FastMC input provided before. The events used are usually ZZ events at 500 GeV. The code produces no outputfiles. Instead the terminal output has to be copied to the respective files.

-- ChristianGrefe - 25 Feb 2009

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