Table of Contents

Simulation Conditions

Introduction

To run the simulation (a.k.a. Gauss) is it necessary to specify in which conditions the events have to be produced, in other word to configure the simulation job. This needs to be done both for private and central productions.

In both case it is necessary to specify

- the type of events one wants to produce (minimum bias, a given signal, particle guns, machine induced background, beam gas, etc.)
- the generator to be used for the production (pythia, hijing, etc) and its settings
- the beam settings (energy, luminous region, pileup, spillover, etc)
- the physics settings of geant4 (production cuts,physics lists)
- the parts of detectors to be simulated (all physics detectors, only the calorimeters, also background detectors, etc)
- the version of the detector geometry description to be used via the DDDB tag (e.g. velo as described end of 2009)
- the conditions of the detector to be used via the SIMCOND tag

Some of these conditions are specific to Gauss and are set via its configurable options and propagated to the relevant algorithms. Other conditions are common to Boole and Brunel that will need to be configured accordingly; Boole and Brunel for example should use the same DDDB and SIMCOND tags as used by Gauss to produce the events.

A dedicated *Simulation configuration database* with the mapping between *Simulation Conditions Descriptions* and *configuration/conditions settings* needs to be put in place. This will be then used by LHCbApp() to retrieve the given settings for a *Simulation Condition ID* so that Gauss() will be able to set its own properties accordingly when passing to it a *Simulation Condition ID*.

The *Simulation Condition ID* is what is available in the BookKeeping in order to find events produced with given conditions. In AppConfig for Gauss there will be a main steering file for each supported *Simulation Condition ID* and the BookKeeping will keep this association to give it to the Production System. In the Production System it will be sufficient to specifiy this *Simulation Condition ID* and no additional options nor database tags should be specified.

Until then the list of *Simulation Condition IDs* that can be found in the BookKeeping, description, Gauss() options and database tags are listed below.

In some cases the processing pass will change and not the Simulation Conditions, i.e. if the SIMCONDTAG is the 'latest reference that should be taken because noise, alignment, etc. are THE new baseline. This will be indicated in the *SImulation Conditions IDs* for a new version of AppConfig.

tags

For all available conddb tags refers to the CondDB release notes⧉

MC09

MC for 2009 data

MC for 2010 data

Simulation Condition ID	Processing pass	Beam Conditions	Detector	Magnetic Field
Beam3500GeV-VeloClosed-MagDown-Nu1	2010-Sim01Reco01-withTruth	3.5 TeV with beta*=2m, up to 156 bunches (no spillover, no external crossing angle), pileup with nu=1	Complete detector (not upstream Velo) as described end of 2009	B field pointing down, internal crossing angle -270 urad
Beam3500GeV-VeloClosed-MagDown-Nu1	2010-Sim0Rec0-withTruth			
Beam450GeV-VeloClosed15mm-MagDown-Fix1	2010-Sim0Rec0-withTruth			

-- GloriaCorti - 25-Mar-2010

This topic: LHCb > SimulationConditions
Topic revision: r2 - 2010-03-26 - GloriaCorti