Subject: EMC time-based simulation
Posted by Dima Melnychuk on Wed, 20 Jun 2012 14:53:38 GMT

Hi,

I have just committed a code for time-based simulation in EMC.

Macro to run EMC time-based digitization is
/macro/emc/digi_emc_timebased.C

I have it implemented rather long time ago, but the problem is it does not solve the task I wanted to solve with it.
But it would make sense to commit the code as a milestone.

So what the code does it makes EmcDigi not ordered event-by-event but stored in Writeout buffer, from which they can be extracted for given time interval in reconstruction algorithm. (Which still needs to be implemented).

But for the EMC the task of pile-ups recovery should be solved/implemented in simulation.

I tried to solve it within framework of time-based simulation and haven't managed to implement so far.

In more details digitization in EMC takes place in two steps. First step is EmcHit converted to EmcWaveform, which represents output of sampling ADC and at the second step EmcWaveform is converted to EmcDigi, which represent an output of FPGA, which extract energy and time from waveform.

According to Tobias the Writeout buffer can be used only in one step in digitization and here I suppose that EmcDigis should be stored there since it's a task of cluster reconstruction algorithm to build clusters from Digis unordered by events.

But in EMC pileups take place at the level of waveforms and they can be partially recovered by algorithm implemented in FPGA.

So it's what I haven't managed to resolve so far:
as an output we need EmcDigis not ordered by events, pileups which should be analysed at the previous stage and Writeout buffer instead of TClonesArray possible only at one stage.

Dima