A short summary from the 32nd FCAL HWG Meeting:

We had two presentations:

- by Sergej, BeamCal operation parameters

- and by Angel, BeamCal Specifications Request

The main goal of the meeting was to get better understanding of the BeamCal readout requirements in order to start the design of the readout chip as soon as possible.

Sergej gave an overview of ILC BeamCal operation parameters, including recent updates:

- The ILC beam time structure, very important for the readout, was also shown

- In particular a possibility of using signal from muons coming ~22ns before the signal from interaction, was presented

- Quick comparison of default (GaAs based) and new (sapphire-based) BeamCal architecture was shown

- Main pros of new architecture are radiation hardness, easier calibration, reduced dynamic range of signals (Physics and MIPs)

- Cons are spatial uniformity and energy resolution

Angel showed his request for BeamCal ASIC parameters:

- Main message was to get specs for chip, which will probably not fulfill final BeamCal requirements, but which will be good enough for test-beam verification

- A number of parameters like sensor capacitance range, gain, nr of channels, etc... is needed to start the design !

After presentation we have had lively discussion on which functionality should be implemented in the chip in order to have the performance good enough for test-beams, on one side, but to have it designed and fabricated as soon as possible, on the other side. Few points/limitations we can probably accept in this first prototype are:

- Number of channels 8-16 instead of final ~32

- Front-end should work both with GaAs and Sapphire sensors

- Static change of gain between physics/calibration modes should be enough in first prototype

- Probably we can accept only analog version (adding ADC+serialization would increase dramatically design time)

Above conclusions are very preliminary, nothing was decided yet.

We agreed that in short time Sergej will prepare a two-column table with specs for the test-beam and the final BeamCal chip, together with his

Comments/doubts.

On such basis we will organize meeting(s) to work out and fix the set of specs for the first prototype, so that Angel could start the design within ~month. Next goal would be to have the chip fabricated in the first part of 2018.

Best Regards,

  Marek