Minutes of USC Instrumentation meeting on 16-09-2010

Present: A. Gallas, P. Rodríguez, E. Pérez, D. Esperante, J. Visniakov, A. Pazos.

1) DEPFET

Status of Belle LV design prototype (J. Visniakov):

J.V showed the schematics of the two PCBs that will constitute the system. The first board will house the primary voltages, the transformers, the DC/DC converters and the voltage regulators. The second board has the 18 voltages needed to power the PXD matrix. Only one part of the board is designed. There are still parts missing in the design. There are some difficulties that have to be solved. In one case is the output of a voltage regulator that has to be enlarged, and in the other case some connectivity issues with the micro-controllers used in the board. Daniel will get back to J.V for more clarification of the problem and possible solution. The files from the presentation gave by J.V are uploaded on the instrumentation website.

J. Visniakov is working on the design and the presentation that has to give in Valencia.

New PXD5 matrix (J. Visniakov):

The problems with the LV have been solved. J. Visniakov could operate the matrix. The quality of this matrix is higher than the previous one. Only one row or column is not operational. J. Visniakov took some noise data with the matrix. Measurements with the source will happen after Valencia´s meeting.

Irradiation activities status at Santiago (E. Pérez):

The last irradiation step finished on the 5th of August. The first step started on 24th of June. Eleven steps were taken in the irradiation (0.1, 0.2, 0.4, 0.7, 1, 2, 3, 4, 5.5, 7.5, 10 MRad). After the irradiation, we annealed the transistors at room temperature for 27 days. In total the irradiation took 4 months approximately. Mainly, three magnitudes were studied during this irradiation: threshold voltage shift, gain shift and sub-threshold region size. The analysis of the data is ongoing at the moment. The results will be presented on the Valencia Depfet meeting that starts on the 29th of September.

E. Pérez showed the results for the 60 transistors that were irradiated. The files of his presentations will be uploaded in the Twiki.

2) PR01 test-beam in May-July data analysis status (P. Rodríguez)

P. Rodríguez reported on the status of the analysis of the data taken. He showed results with resolutions as good as 8 microns for the PR01 sensor. This value corresponds to a sensor angle of 10° with respect to the particle beam and in the

40 microns pitch region. He is still fighting to get the correct alignment files of some of the runs we took back then.

3) TimePix Telescope Trigger Logic Unit (D. Esperante):

Daniel decided to take over Richard Plackett in the design and construction of the TLU for the telescope, since Richard is busy with other tasks. This was very appreciated by Richard and the upgrade group. Daniel got from him a kit board with an Altera FPGA and he is learning how to program it using VHDL. The goal is to produce a flexible device that will allow to integrate different DUTs in the telescope, produce a trigger logic and time stamp the different signal involved with the desired precission. A new computer has been bought and the software is installed. He is proceeding with the first test of the demo board.

4) News from CNM (A. Gallas):

The CNM is producing a second run of sensors. This time n on p (radiation hard). They will be finished in 1.5 months from now. The thickness are 300, 200, 150, 100 microns, p-spray technology. The goal here is to instrumented both with TimePix and Medipix3 ROC. The assemblies with the Medipix3 (radiation hard) ROC will be irradiated at CERN with protons at to fluences of 1.5 10^{16} . The plan is to get them irradiated before the testbeam campaign next year.

5) Tooling for the pixel assembly in Santiago (A. Pazos, E. Pérez):

Antonio is looking into recuperating a hot plate from the small bonding machine to be used as a part of a die bonder we need for the assemby of the pixels sensor at Santiago.