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Subject: Re: 39th FCAL Hardware WG Meeting

Dear All,

Short summary from  the 39th HWG meeting. We had Three presentations:

1. Eva reported on LumiCal sensor testing in Tel Aviv

- basing on the system prepared for HGCAL sensors (mainly switch card plus software) similar system for LumiCal sensors was built

- Dedicated probe card for LumiCal sensors was developed,

- Setup containing the probe card and lab instrumentation (probe station, RLC meter, etc..) was built in Tel Aviv

- Preliminary measurements of C-V and I-V curves have been already done,

- Preliminary results on leakage current, sensor capacitance, and depletion voltage are in qualitative agreement with expectations, although quantitative understanding/verification/tuning is still needed.

2. Eva gave update on new tungsten plates and carbon fibre envelopes

- 25 new tungsten plates arrived to CERN from Dubna

- Setup for flatness measurements is just being prepared at CERN, first measurements should be available in 1-2 weeks

- New, better ("stronger", without glue spreading out,  slightly thinner~600um) were developed at CERN

- 25 new carbon fiber envelopes were produced, and are available to users (Yan asked 2 of them)

3. Jakub reported on status and modification in architecture of LumiCal readout/DAQ system

- thanks to availability of new FPGA boards (Trenz ZynqUltraScale+ boards with 20 transceivers) the two-level FPGA-based architecture can be replaced by one-level architecture plus ordinary ethernet switch.

- Architecture simplification is possible because new Trenz boards contain: 20 transceivers and ARM processor

- Overview of a new DAQ architecture , regarding both hardware and software/firmware, was given (see slides)

- Regarding hardware, a number of components need to be bough (see the slides), but I hope, with common effort, we can do it

- Software/firmware is now the main bottleneck, because most of it (DSP, control, TLU interface, timestamp synchronization, etc..) need to be done. Some parts (FLAME data receiver, CLK synchronizer) have been partially done but need to be verified/modified

- In next two weeks the involved groups (not all were participating in the meeting...) should clarify their contributions

Best Regards,   Marek