UNIVERSITÀ
DEGLI STUDI DI TRIESTE

Update on Trieste Activities

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on behalf of Trieste SuperB Group

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Summary

Group is involved in strip detectors DAQ, ROC & dE/dx, irradiations studies (I.R., see Stefano talk).

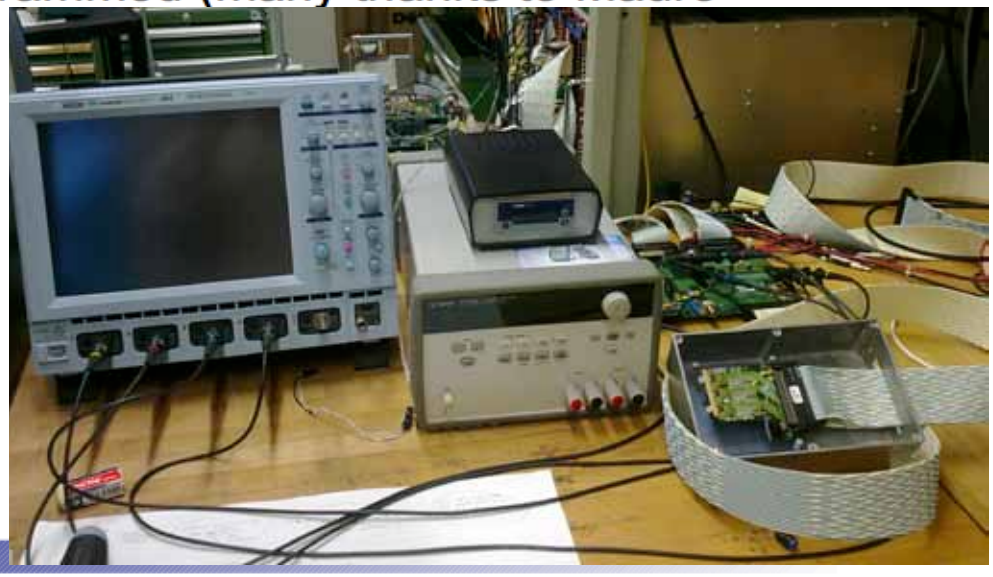
News since Elba meeting:

- New standalone FSSR2 DAQ is working (for lab use, replaces Pomone) L.V.+P.C.
- Telescope spares construction ongoing.
- Ongoing discussions on FSSR2 alternatives.
- Starting studies (particle ID with SVT dE/dx) C.S.
- Marco Bomben left the group in August ☹.
  Many thanks Marco for all your work & efforts, hope you'll be back in SuperB in future!

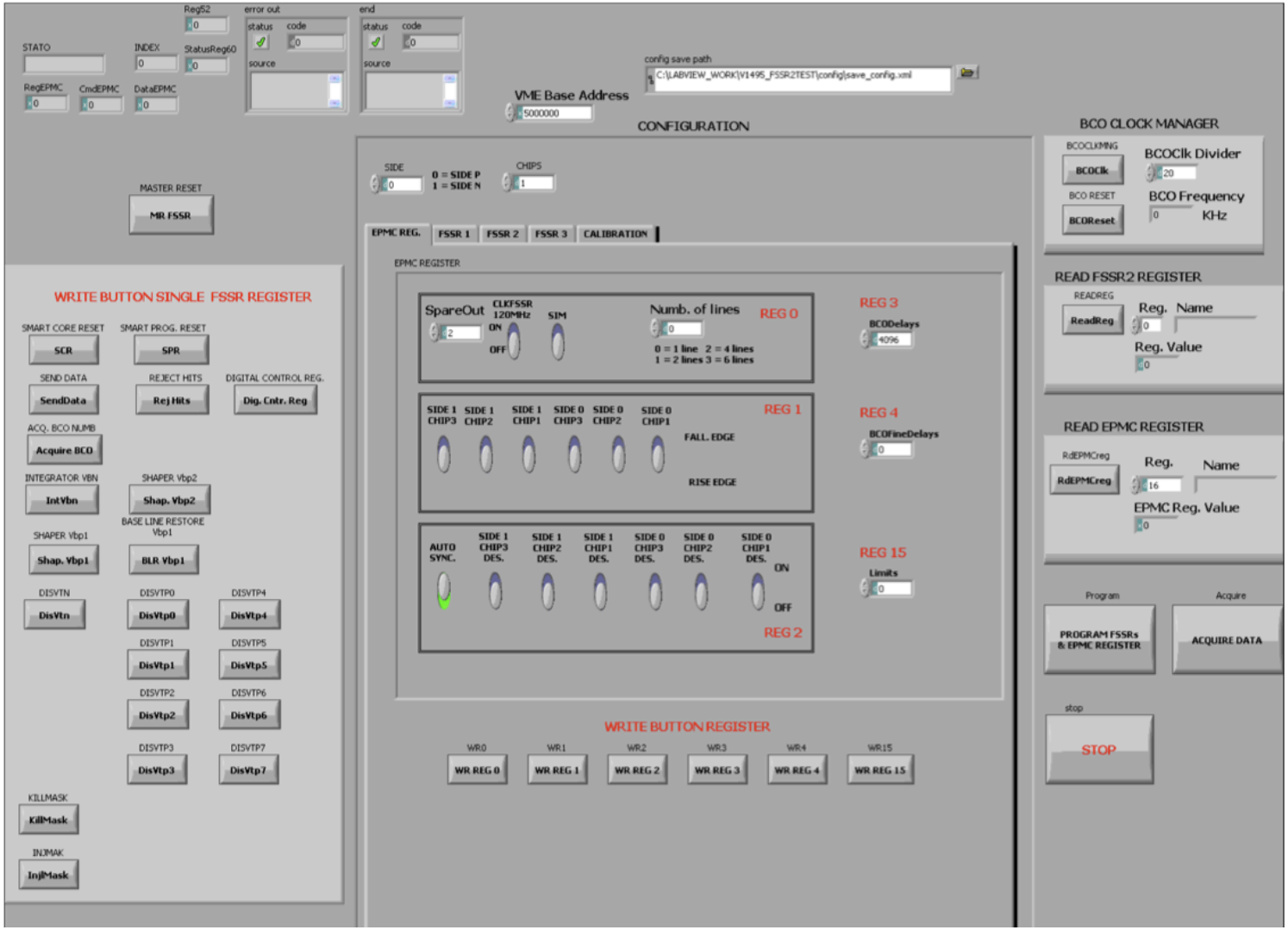
New DAQ chain for FSSR2

New DAQ

- We are developing a new DAQ, which is based on a CAEN board which has FPGAs
- We will program chips and read data through a VME-USB bridge and a Labview-based acquisition program
- Status: FPGA is programmed (many thanks to Mauro Villa)
- First tests ← NEW
  - See next slides...



After 3 months, Labview program now ready



New DAQ chain for FSSR2

Obviously not everything so straightforward, but now things start to work …

- Write and read back all registers
- Correct initializations procedures
- Able to acquire data
- and to perform calibrations

- Some limitations due to small RAM (extend it?)
- Not all functionalities still available

Alternative Read Out Chip

- As it is FSSR2 is not adequate for Layer0 (occupancy), external Layers (noise), moreover limited range for negative signals

- Preliminary meeting on Aug. 31 with FSSR2 digital designers from Fermilab (Ray Yarema & Jim Hoff) about FSSR2 limitations and alternative ROC.

dE/dx in SVT

- Carlo Stella (diploma student) has started to study dE/dx in the 6 double layers SVT
- FSSR2 provides a 3-bit ADC information for each hit
- One of the goals is to see if electrons from pairs can be vetoed with dE/dx

dE/dx and simulated data

- We started looking at full simulated events
  - Pairs
  - Single particle (momentum distributions as inclusive *soft π's* from ϒ(4s) and cc)
- We will "digitize" the released energy in SVT layers by using a scheme a la FSSR2
- We will try to understand several things:
  - How thresholds need to be set
  - Are 3 bits enough?
  - What is the optimal number of adc bits

Conclusions

Several activities are going on:

- New DAQ chain works
- Constructions of 4 telescope spare modules
- Study dE/dx in SVT
- Irradiations tests

Manpower limited …