

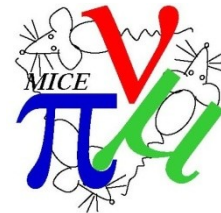
DAQ handover

Jean-Sebastien Graulich, Geneva

- o Achievements since CM28
- o DAQ handover
- o Online Monitoring handover
- o Trigger handover
- o Schedule Milestones
- o Summary



Achievements since CM28



◆ Not much

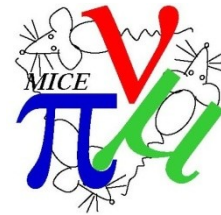
- Most efforts put on the EMR

◆ Some progress in tracker DAQ

- David Adey initiated to DATE
- Reverse engineering of Hideyuki's readout code
- We failed to readout -> we learned a lot
- This triggered a revision of the VLSB firmware

◆ All PSUs for VME crates have been damaged by the power outage in MLCR

- Craig has sent them for repair at DL



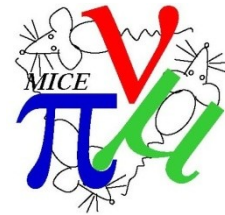
DAQ Handover

◆ Yordan Karadzhov

- now postdoc at University of Geneva
- Taking over the MICE DAQ

◆ Open issues

- Tracker readout
 - Software mostly done
 - Will require integration of two new VME crates, Spill gate and trigger distribution, etc
- EMR readout
 - Software in collaboration with Como/Trieste
 - Will require integration of a new VME crate -> Excellent training before the trackers arrive
- RF readout
 - At some point we will need to record the RF signal in such a way that we can measure its phase when the muon enters the cooling channel
 - One single high sampling rate FADC should do the job -> No serious problem expected here



DAQ TODO list

◆ Limit on the number particles per spill

- Currently caused by the size of the monitoring buffer size
- I've been reluctant to raise that limit before we clearly measure the instantaneous particle rate at the end of the spill
- The detectors and the DAQ have been designed for **only one particle at the time**
That is a rate < 0.5 MHz

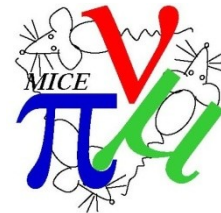
The profile of the trigger rate within the spill should be measured !

- Data has been taken as a function of target delay
- An analysis method has been prepared
- Rob Fletcher and then Adam Dobbs had a look at it but they had no time to finish
- I consider this as a must

◆ Monitor DAQ PSUs in EPICS



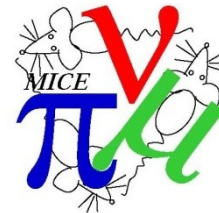
Online Monitoring Handover



- ◆ **Yordan will also take over unpacking software**
 - Need some volunteer for Online Monitoring (ROOT GUI)
- ◆ **Open issues**
 - Unpacking should allow to read from the online data stream or from file without having to recompile the code
 - Would allow to rerun the online monitoring on recorded data
 - Would allow direct conversion of G4MICE applications to online
 - Tracker unpacking
 - Quite urgent now
 - EPICS data unpacking
 - Needed to allow online applications to read magnet currents from the data stream
 - EMR unpacking
 - Must happen before June



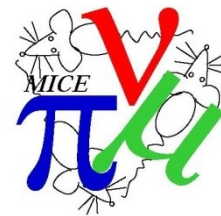
Online Monitoring TODO



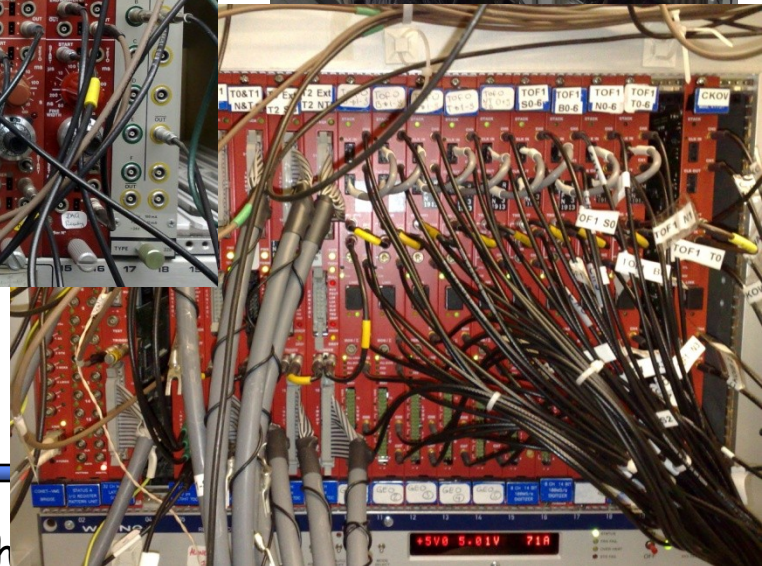
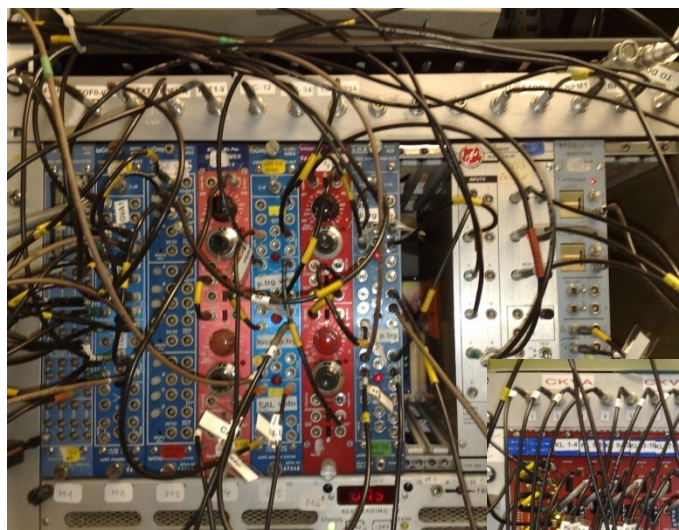
- ◆ Online monitoring for tracker
 - What plots ?
- ◆ Implement standard plot pages
- ◆ Take use of the fact that Online monitoring can talk to EPICS
 - Implement alarms on data quality

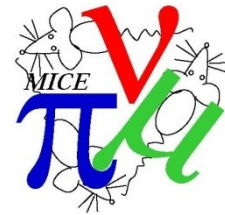


Trigger Handover



- ◆ **This is a serious call for help!**
 - Yordan has to keep responsibilities in TOF
 - No way he can do everything
 - We (you) need someone who can deal with this:





Trigger TODO list

◆ Cabling Upgrade

- Was always postponed to avoid to mess around with the calibration
- Was scheduled on December but I had to cancel my visit

◆ Documentation

- I reckon this might be useful...

◆ TOF TDCs synchronization

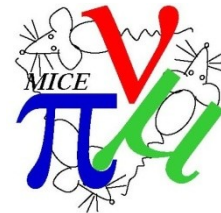
- We can propagate the same clock to all TDC boards and propagate the trigger signal on the same flat cable
- Would allow to simplify the spill profile measurement
- Could possibly improve the resolution but do we need it ?

◆ Use burst gate signal to give the time of the trigger signal

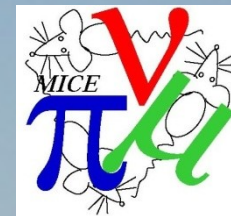
- It has been decided to use only TOF1 as the particle trigger BUT
 - The tracker front end electronics needs a clock structure
 - Everything is simpler if our particle signal is aligned to that clock
 - The burst microstructure of the ISIS beam is the best candidate
 - **That signal is not even arriving to the MLCR yet!**
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Schedule Milestones



- ◆ From CM28
- ◆ Tracker integrated in DAQ and OLM July 10 -> Nov 10
- ◆ Trigger System upgrade (+documentation) August 10 -> Dec 10
- ◆ TOF TDC Clock Synchronization Dec 10
 - Do we really need it ?
- ◆ Burst Gate Signal in the Trigger System Need support here
- ◆ Unpacking of EPICS data Nov 10
- ◆ New Online Software release (OLM from files) Dec 10
- ◆ EMR integrated in DAQ and OLM March 11



Summary

- ◆ Very little progress since last CM
- ◆ Yordan Karadzhov is taking over the DAQ and the unpacking software
 - I'll spent the next few month to train him
- ◆ There is a serious lack of expert for the trigger system
- ◆ DON'T PANIC

