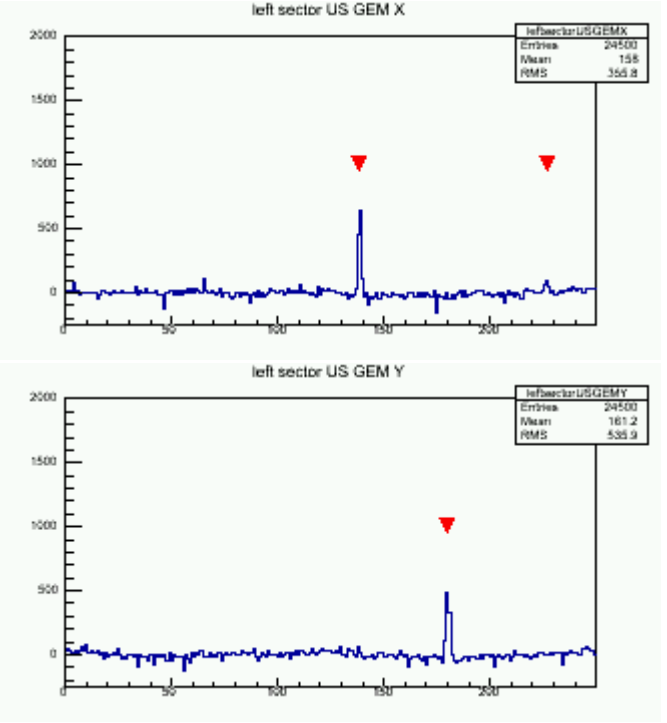
Lumi GEM Status

HAMPTON UNIVERSITY
The Standard of Excellence, An Education for Life

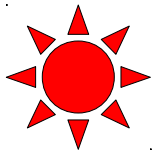
- New APVs
- Self-trigger from 3rd GEM foil
- MC
- Offline
- To do...

Lumi GEM Status – new APVs

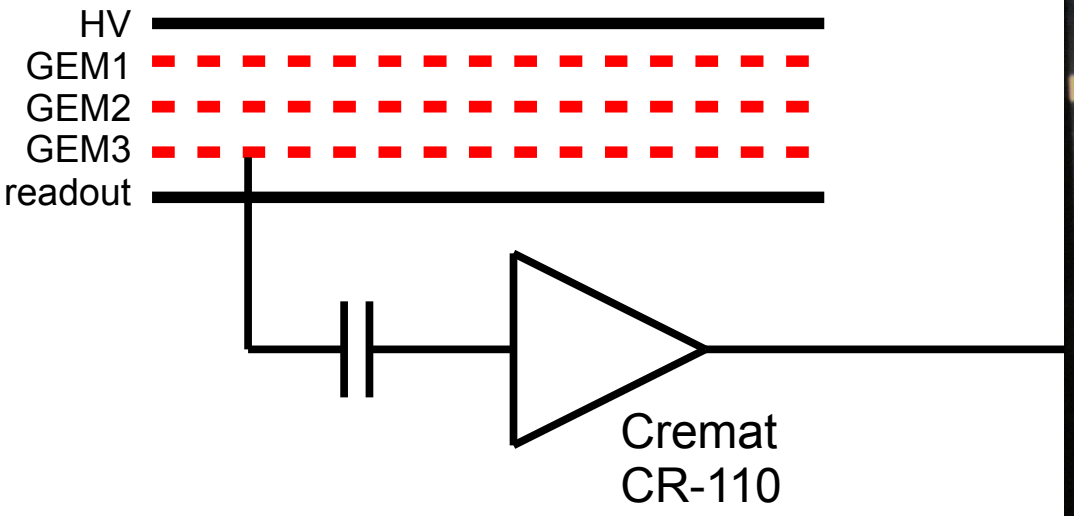


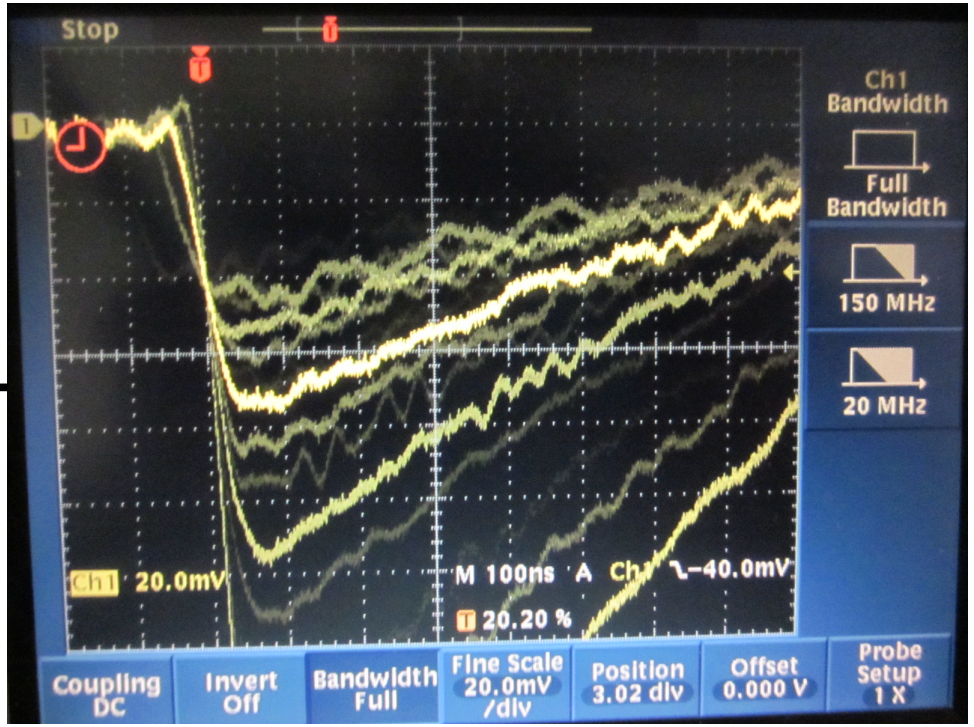
After mounting new APV cards on GEMs:
verfied that new APV front end cards are operational using ^{207} Bi source and a plastic scintillator for triggering.
Left DS GEM 2nd Y APV has cabling problem – to be fixed...

Lumi GEM Status – Self-trigger



^{207}Bi





After having fixed some grounding/noise issues (thanks to H. Eckoldt) signals look much more reasonable now!

Efficiency still not clear (source emits photons as well...)

Currently soldering the supply boards (supply voltage noise reduction, input/output coupling)

Lumi GEM Status – Selftrigger

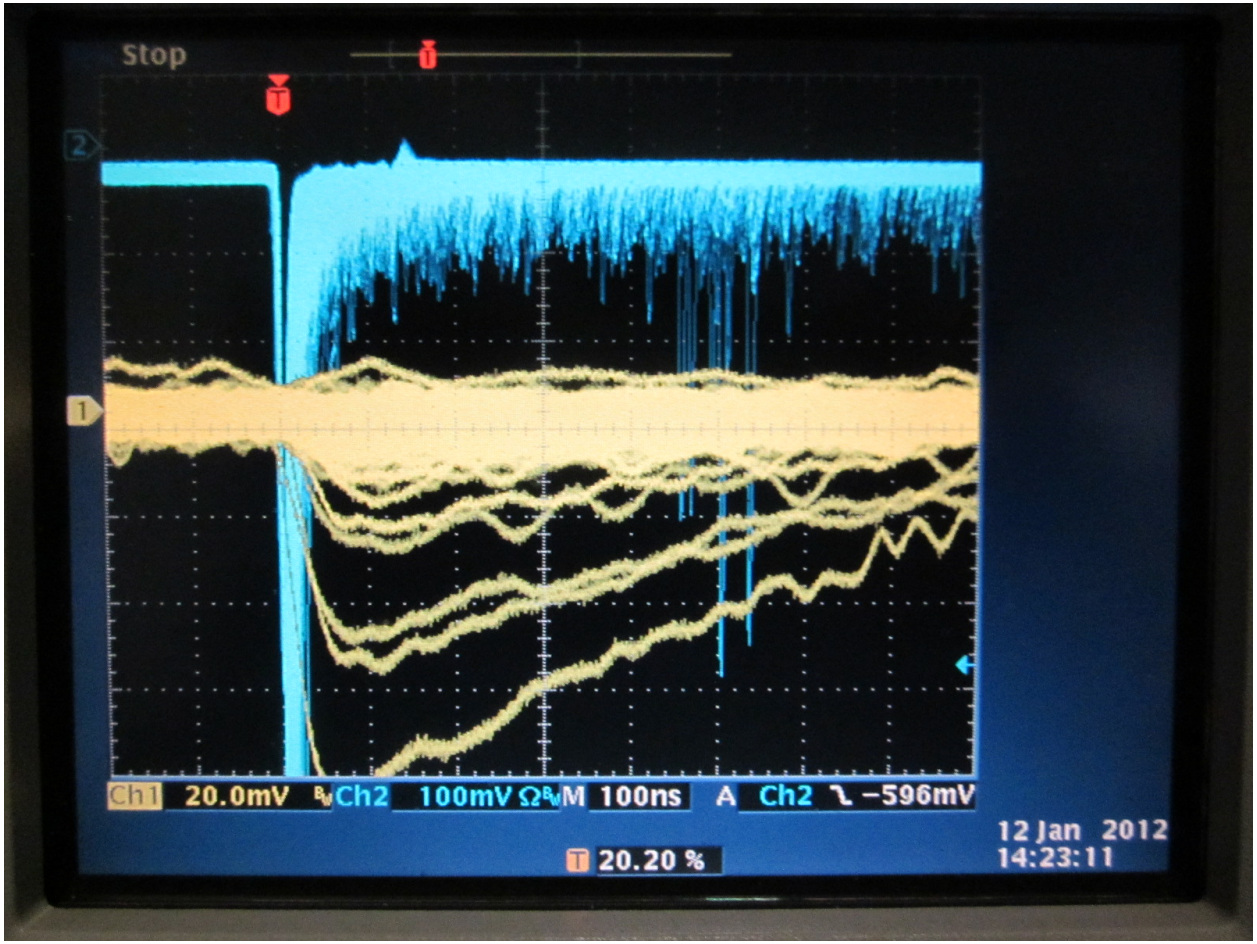
HAMPTON UNIVERSITY
The Standard of Excellence, An Education for Life

GEM self-trigger signal (yellow)

is in coincidence with

plastic scintillator (blue)

Rise time is quite long, however...

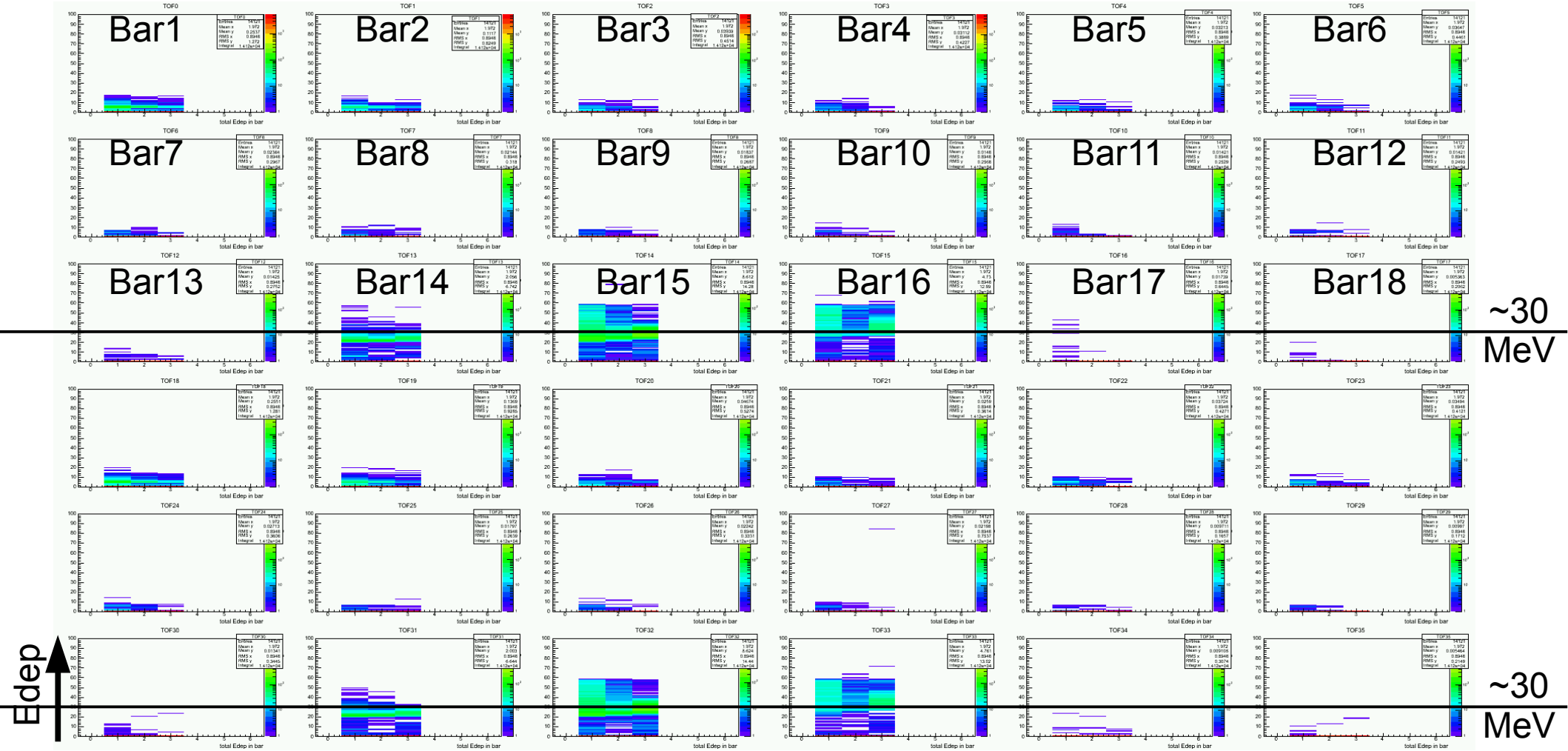


We're going to install up to three such preamps in order to test this option

Lumi GEM Status – MC

HAMPTON UNIVERSITY
The Standard of Excellence, An Education for Life

Did some MC runs with latest TOF geometry recently to determine TOFs needed for 12° trigger: Using bars 12..17 would cover all possible beam species/magnetic field configurations



Lumi GEM Status – Offline

HAMPTON UNIVERSITY
The Standard of Excellence, An Education for Life

- LumiGEMlib: raw data I/O, handling of APV data, APV/GEM mapping, hit finding and clustering, ...
- LumiGEM Plugin for cooker
- LumiGEM Plugin mode for explora
- LumiGEM Tab for VisualCooker

Cluster finding recently improved – thanks to VisualCooker (visco)! Was optimized “in the early days” on what we saw in the GEMs most of the time (i.e. low energy stuff – huge amplitudes and cluster widths)

See Özgürs talk: straight line tracks to reconstruct target density profile

→ Need to implement some of this code into the LumiGEMlib now

→ Then we will be able to provide (xl,yl) clusters to the official tracking

Lumi GEM Status – To do...

HAMPTON UNIVERSITY
The Standard of Excellence, An Education for Life

- Right sector APVs to be tested with source
- Sparsification for APV readout with pedestals from file – almost done
- Event type for GEM lumis in DAQ – in case sparsification doesn't work as expected anyway (Philipp, Alexander)
- Test 12° lumi trigger with TOF pattern (bars 12..17)
- Install preamps for self-trigger test – can be unplugged if they mess up the GEM APV readout (noise...)
- Provide (xl,yl) hits for tracking