



MINERvA Meets Neutrinos

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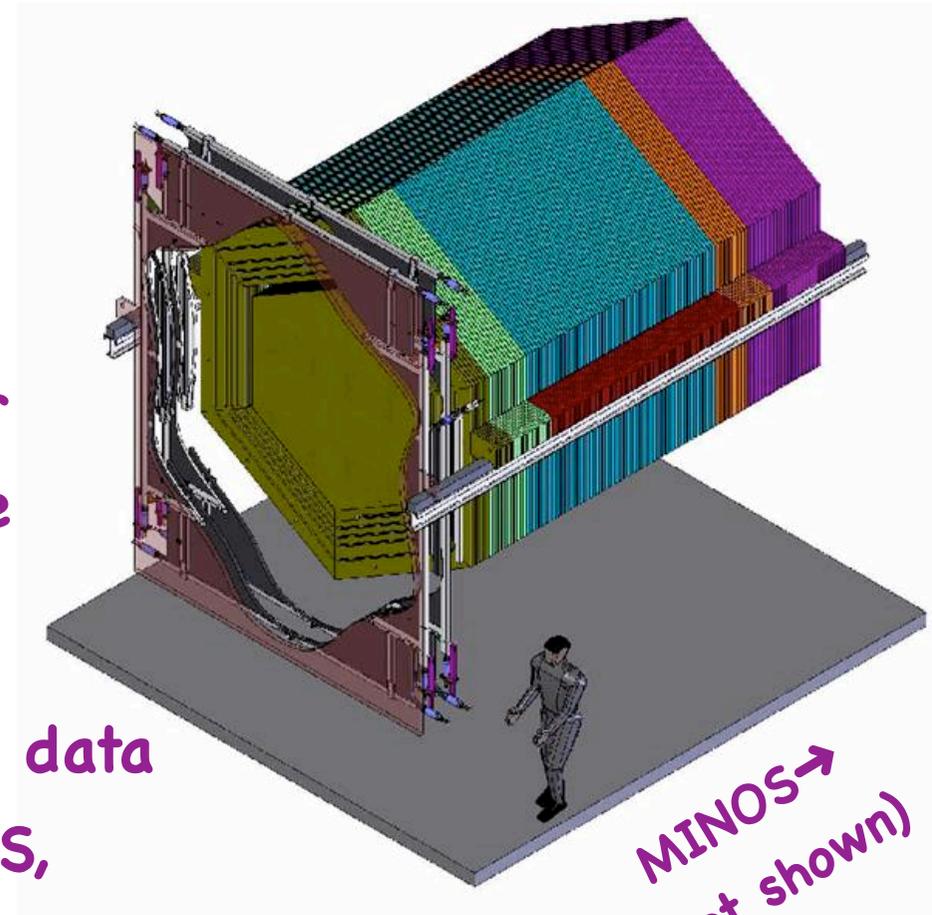
Fermilab All Experimenters Meeting

2009.April.6



MINERvA

- Low energy (few GeV) neutrino scattering experiment.
- Fine grained, fully active tracker region with downstream and side ("barrel-like") calorimeters.
- Will provide useful cross section data to oscillation experiments (MINOS, DUSEL, T2K) and study nuclear physics with pure Weak probe.



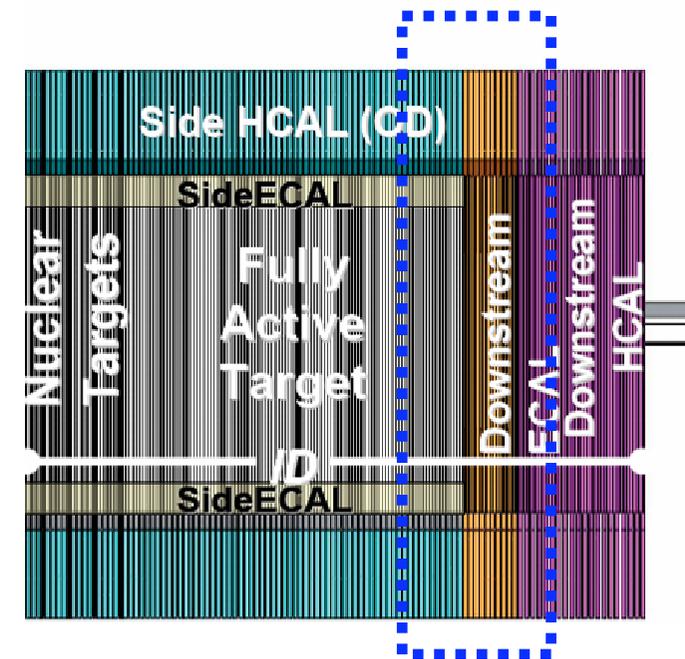
MINOS →
(not shown)



Tracking Prototype (TP)

- Full size modules, but only about 1/5 of the full detector complement.
- First built in Wideband Hall, now in the process of moving to NuMI.
- Fairly large scale prototype: The TP has ~6.7k channels, about 2/3 the number of the MINOS Near Detector (a.k.a. our muon spectrometer)!

TP contains 4 HCAL (1" Steel), 10 ECAL, & 10 Tracker Modules





Started our move on March 16th...



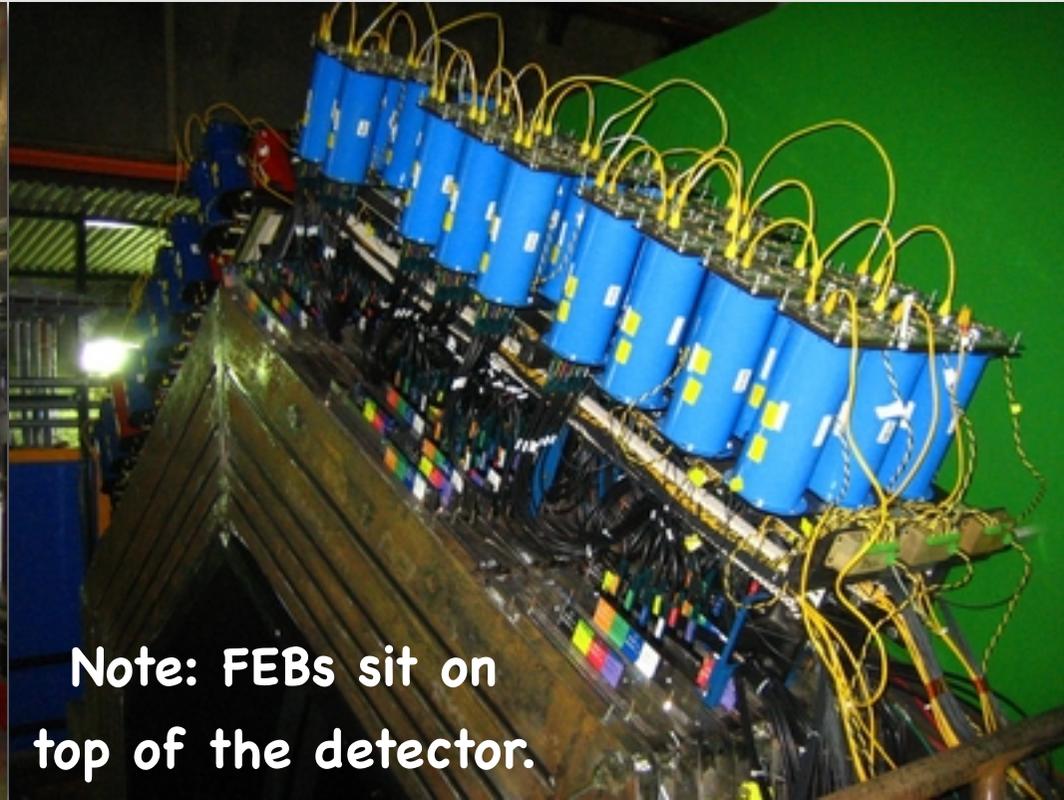
From Wideband...



...to the NuMI Near Hall!



Now have 14 modules mounted and
12 instrumented and reading out!



Note: FEBs sit on
top of the detector.

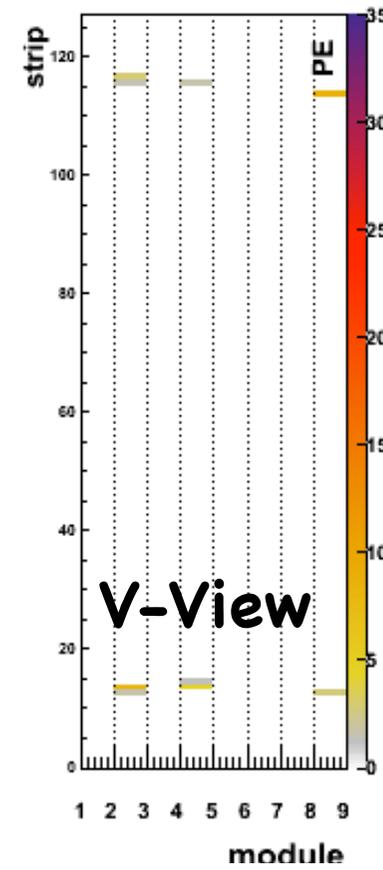
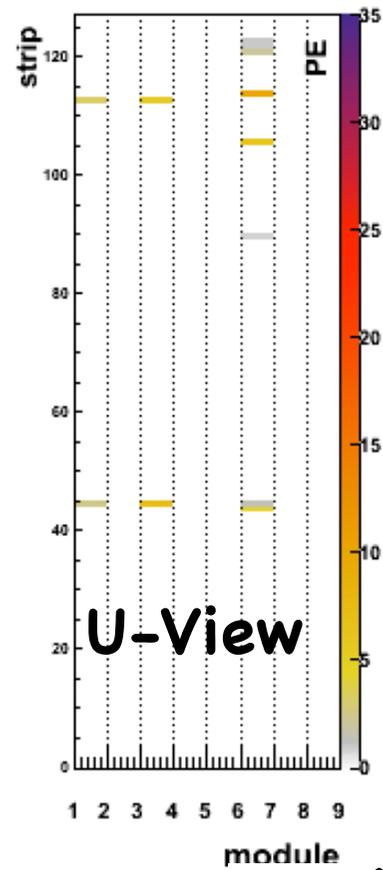
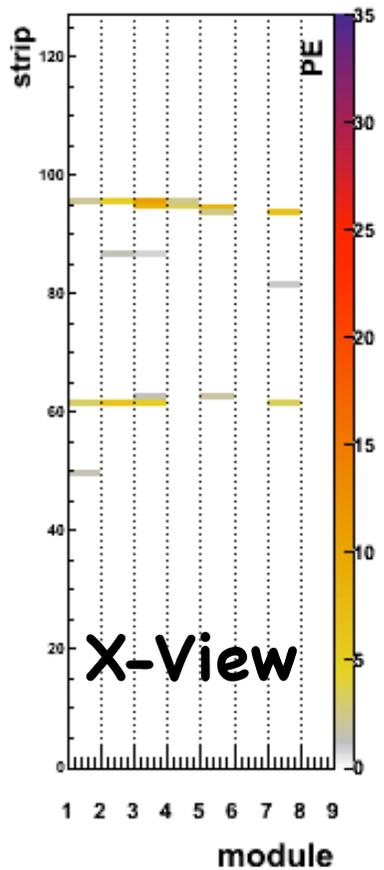
We are on schedule to finish the move by April
14th! 25 tons of detector in less than a month!

“You know you are a real experiment when you are spending time thinking about cable routing...”

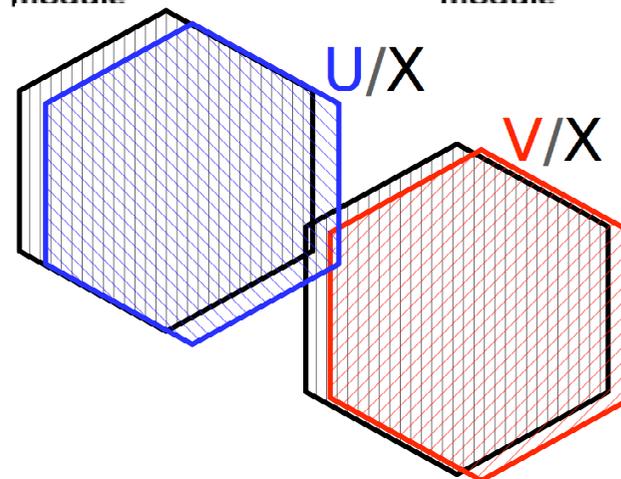


Our readout (well, & the FEBs...)!

Our tracking and detector map software is a bit confused during the move... but we have rock muons!

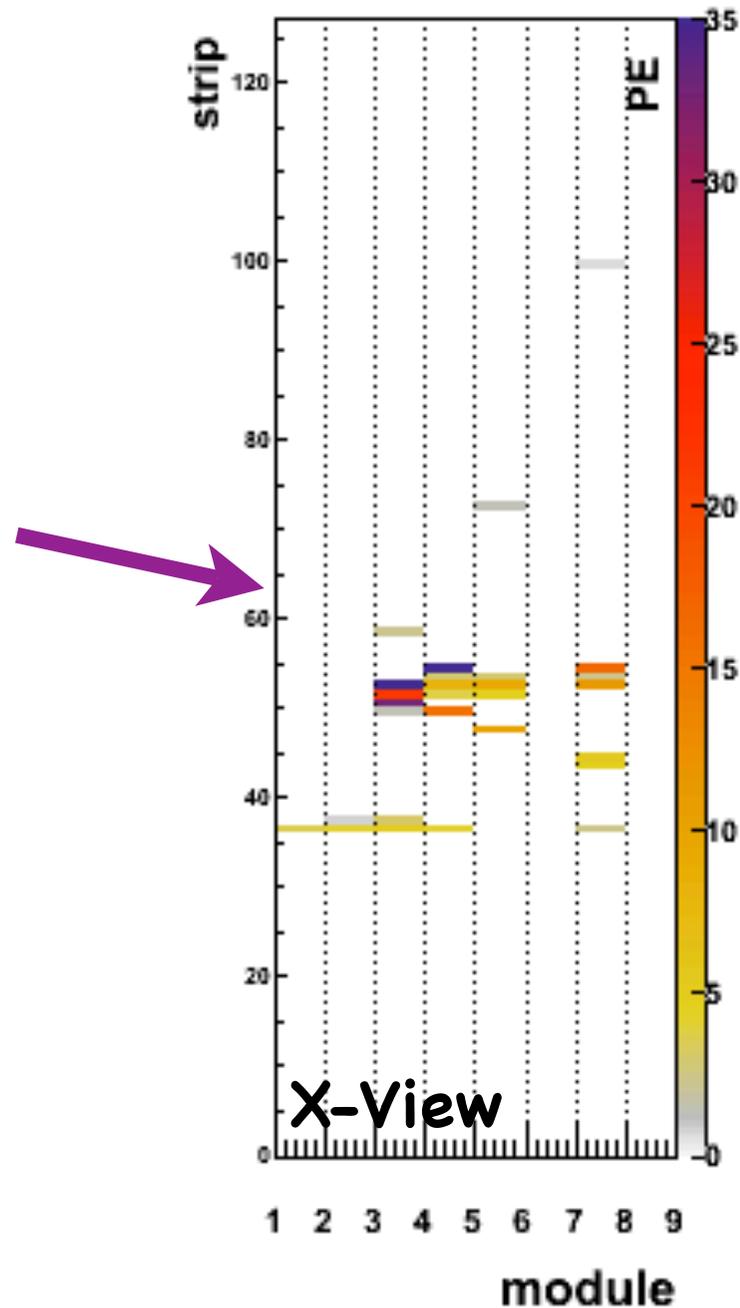


Interleave U and V planes (rotated 60°)



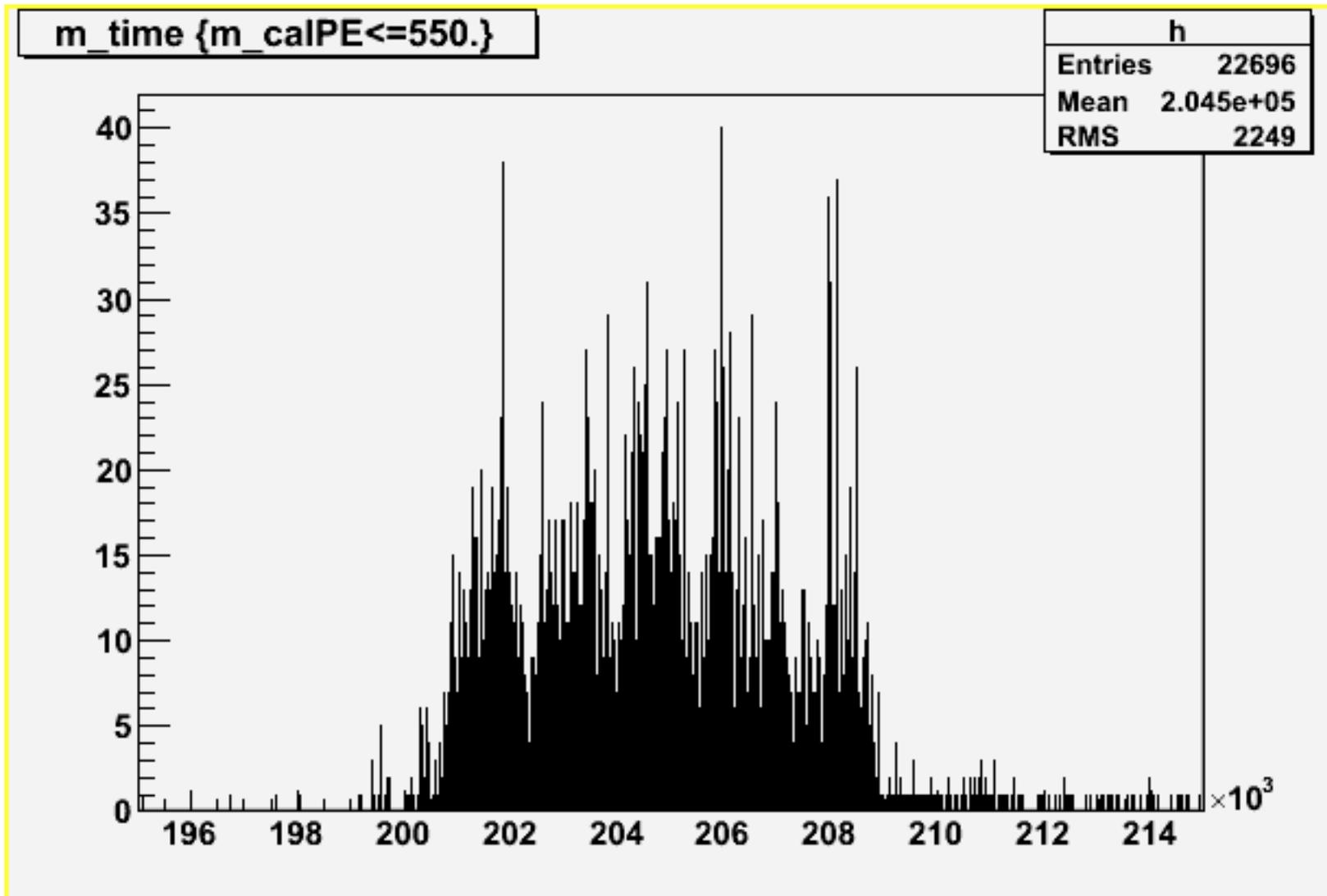
Our cluster of advanced
(coffee-drinking) neural
nets has even identified
some probable neutrino
interactions!

This is MINERvA's
first neutrino
interaction!





We can even see bunch structure in the beam!



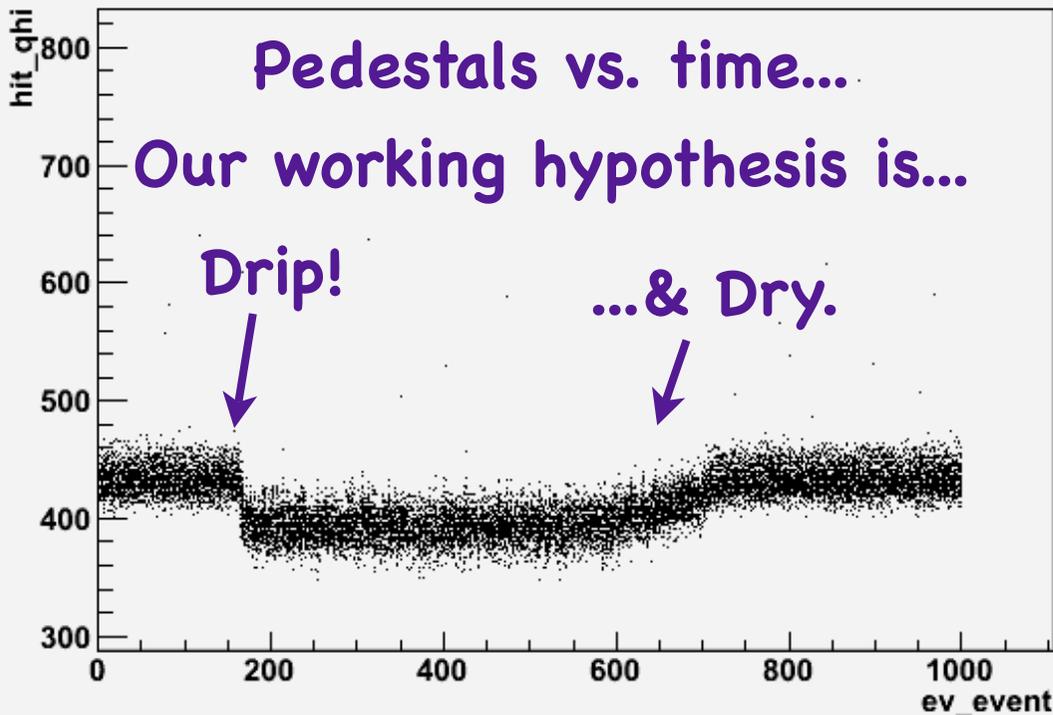
Time in nanoseconds

Some challenges remain...

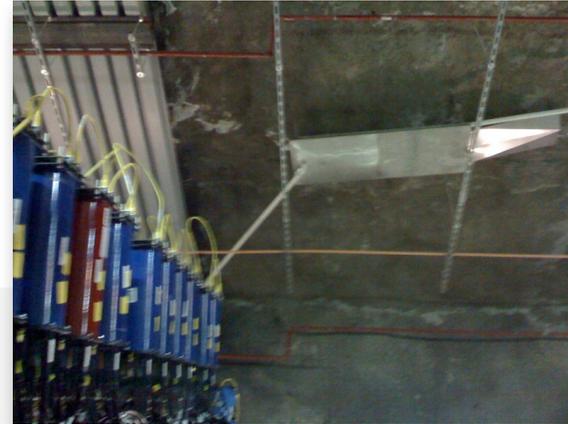


The weather inside is frightful!

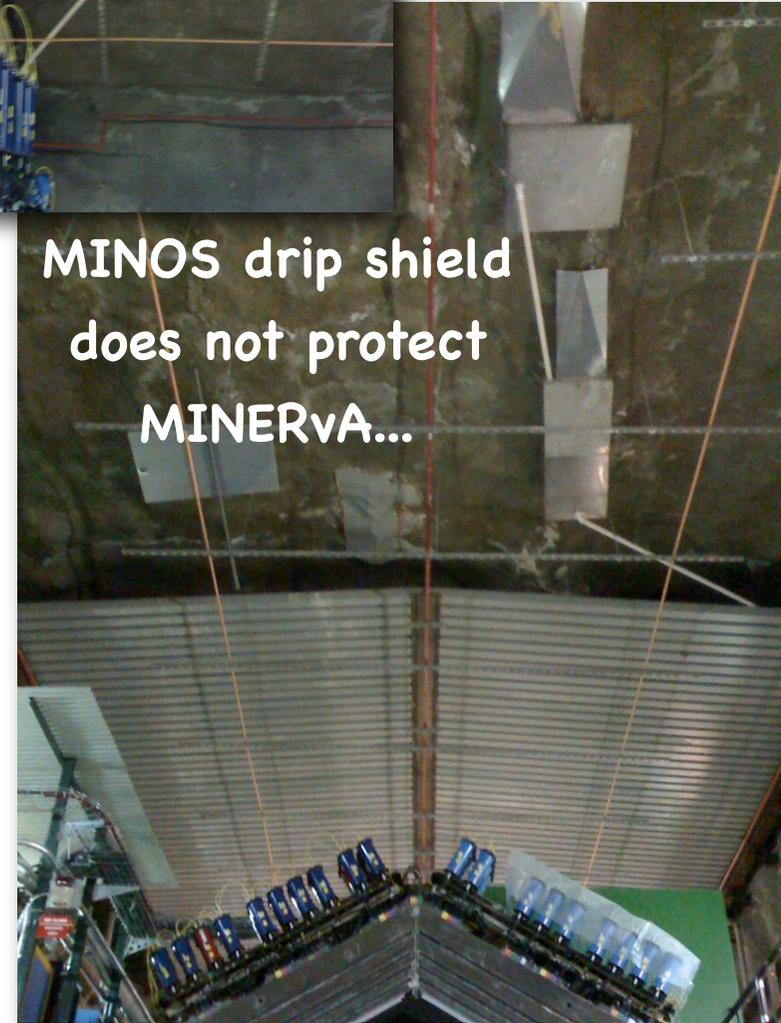
```
hit_qhi:ev_event {hit_croc==3 && hit_chain==2 && hit_board==2 && hit_pixel<16}
```



~2.5 minutes



MINOS drip shield
does not protect
MINERvA...





Thank You!

- On behalf of the MINERvA collaboration, I'd really like to thank the lab for all the help and support we've received for this difficult project.
- Watch construction and more in real time at <http://minervacam.fnal.gov>