DHCAL BEAM TEST @CERN

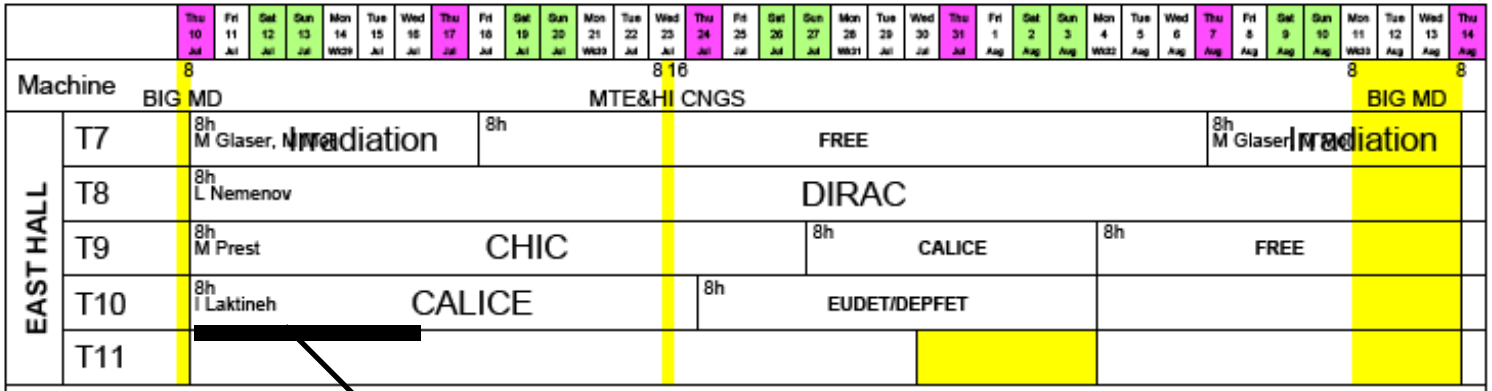
I.Laktineh
IPNL

Aims

- Test a mini DHCAL with new generation embedded electronics readout in beam conditions for the first time
- Have a better idea of the detector behaviour
- Start to study pions behaviour in the DHCAL
- Test new GRPC detectors and compare them with the standard ones

PS Operation — Period 3 2008 Jul 10 to Aug 14

Schedule issue date: 2-September-2008 Version 1.8 (colour code: purple (dark) = scheduling meeting , light green (light) = weekend or holiday)



Remarks

SPS/PS-Coordinator: Emmanuelle Perez
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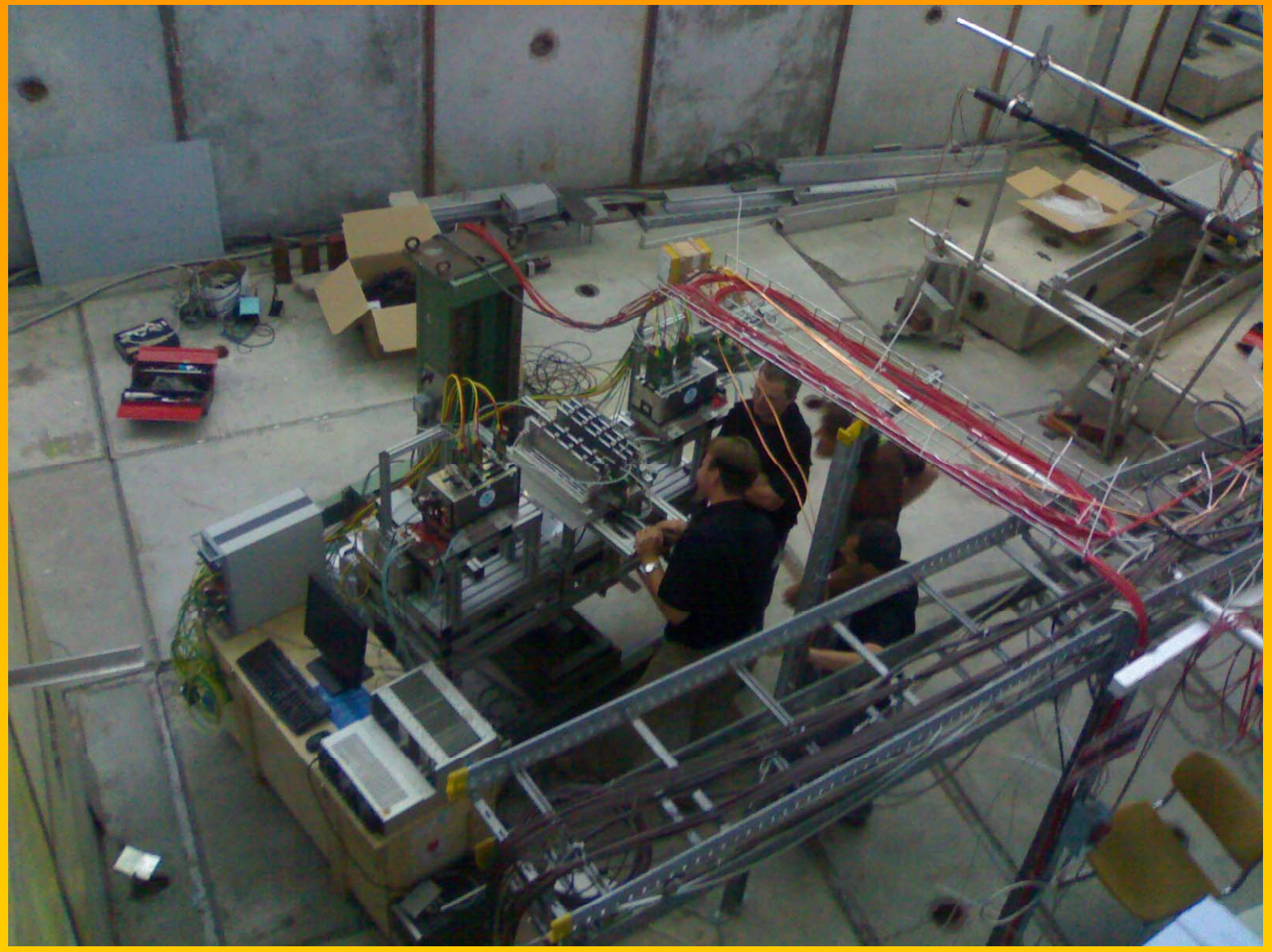
mobile: 165758 (ext. +41 76 487 5758)
- The indicated Machine Stops might not be up to date.
Please consult http://ab-div.web.cern.ch/ab-div/Schedules/schedule2008.pdf

10 days with no beam because of ps magnet problem

Thanks to E.PEREZ (sps coordinator) our beam test from 10 to 17 July was extended to 25 July

Test @ps-T10



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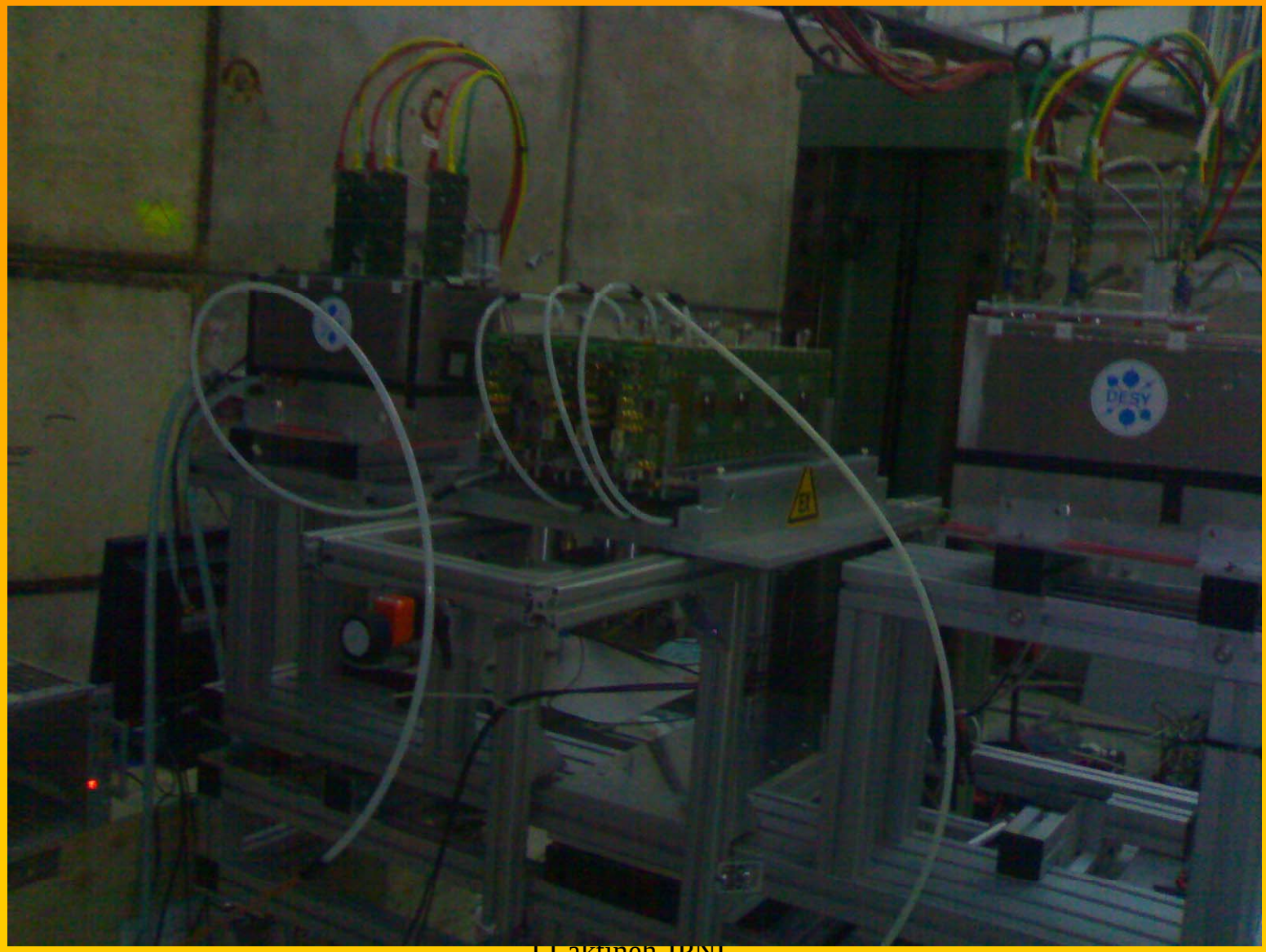
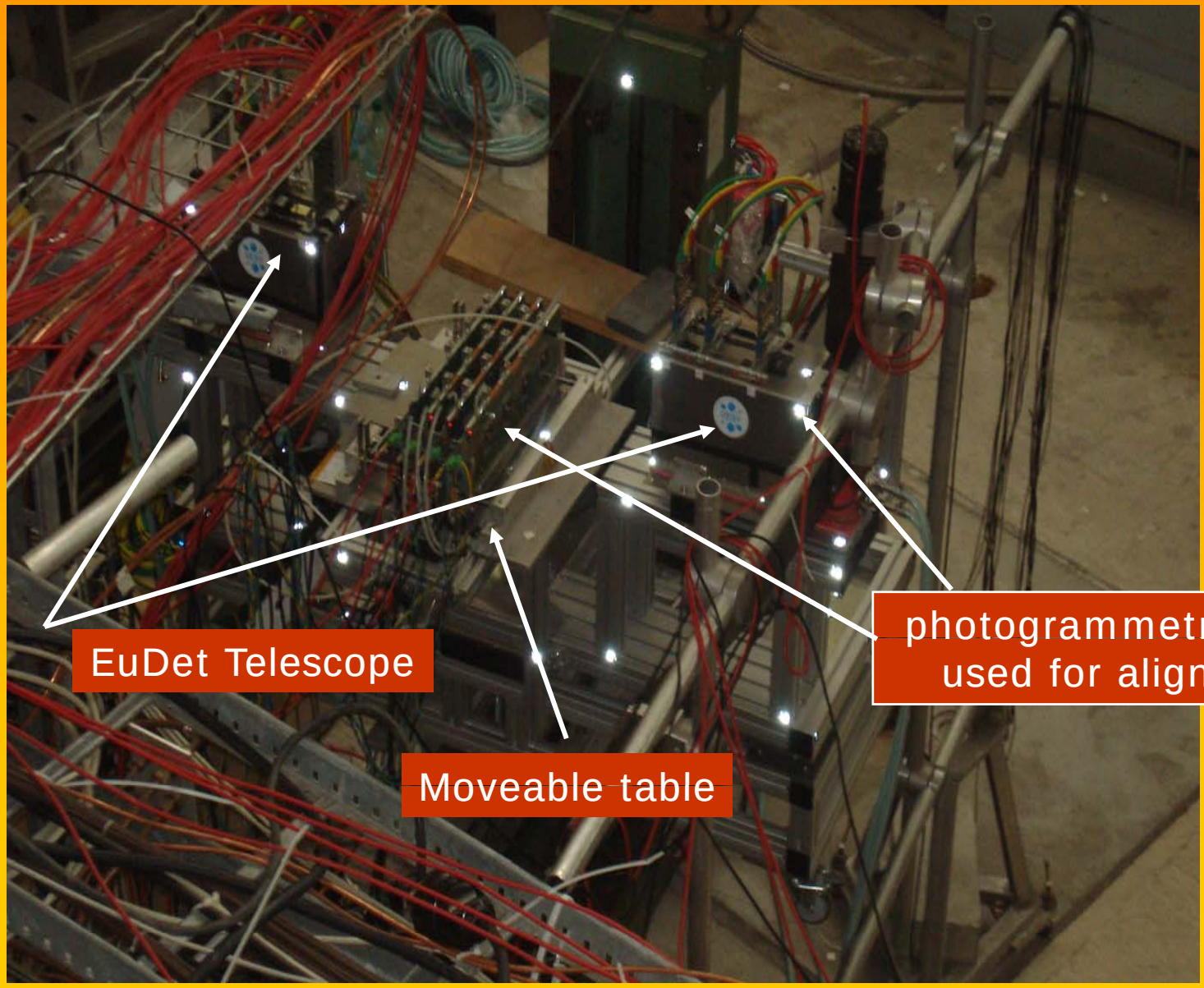


Test @ps-T10

Test @ps-T10


EuDet Telescope
photogrammetric spots used for alignment
Moveable table

Test with EuDET Telescope:

Aim : use the high precision provided by the telescope silicon detectors to study the GRPC inefficiency due to inter-pads and edges effect

The telescope is composed of two arms. Each is equipped with 3 silicon sensors (7X7 mm^2) size.

The precision expected in the middle of the telescope is less than 5 microns when the two arms are used

The telescope is equipped with a scintillator-pm trigger system

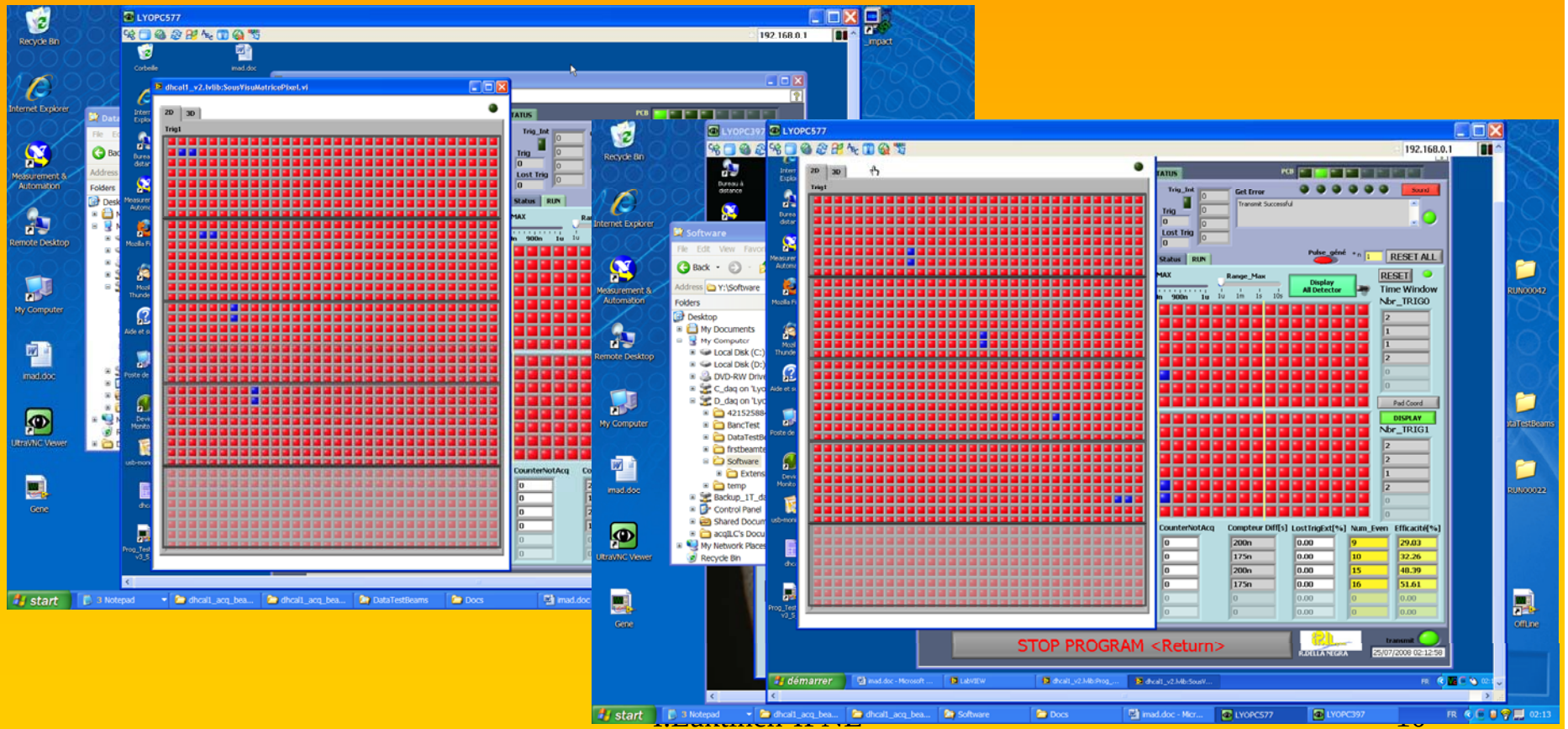
The touched pads in the 4 GRPC for 3 successive positions

Efficiency study (without Steel slabs) versus

1- HV 6,6.5,6.8,7,7.2,7,4,7.6,7.8,8

2- Threshold 100 fc, 200 fc, 300 fc

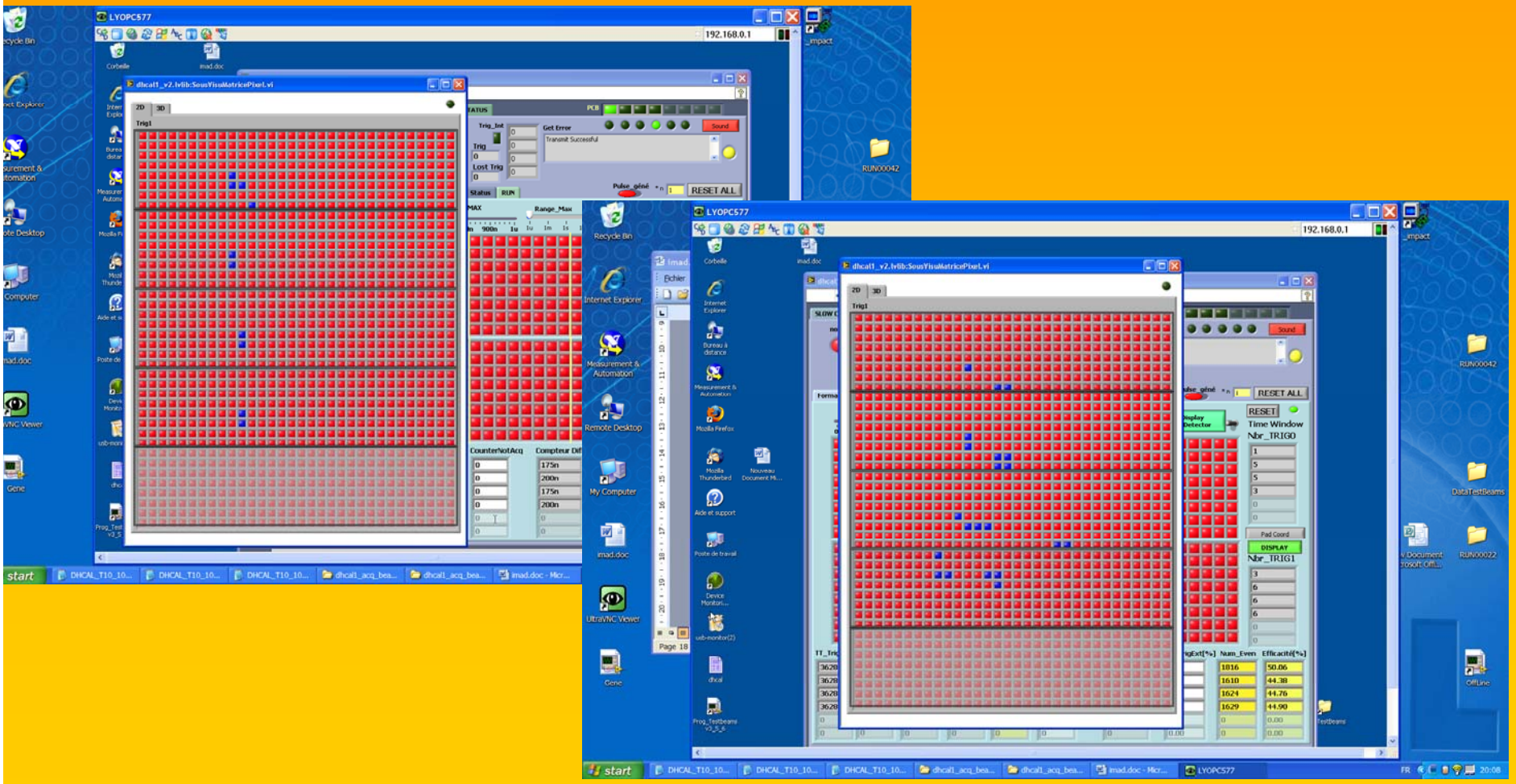
3- Angles 0°, 15° , 30° , 45°



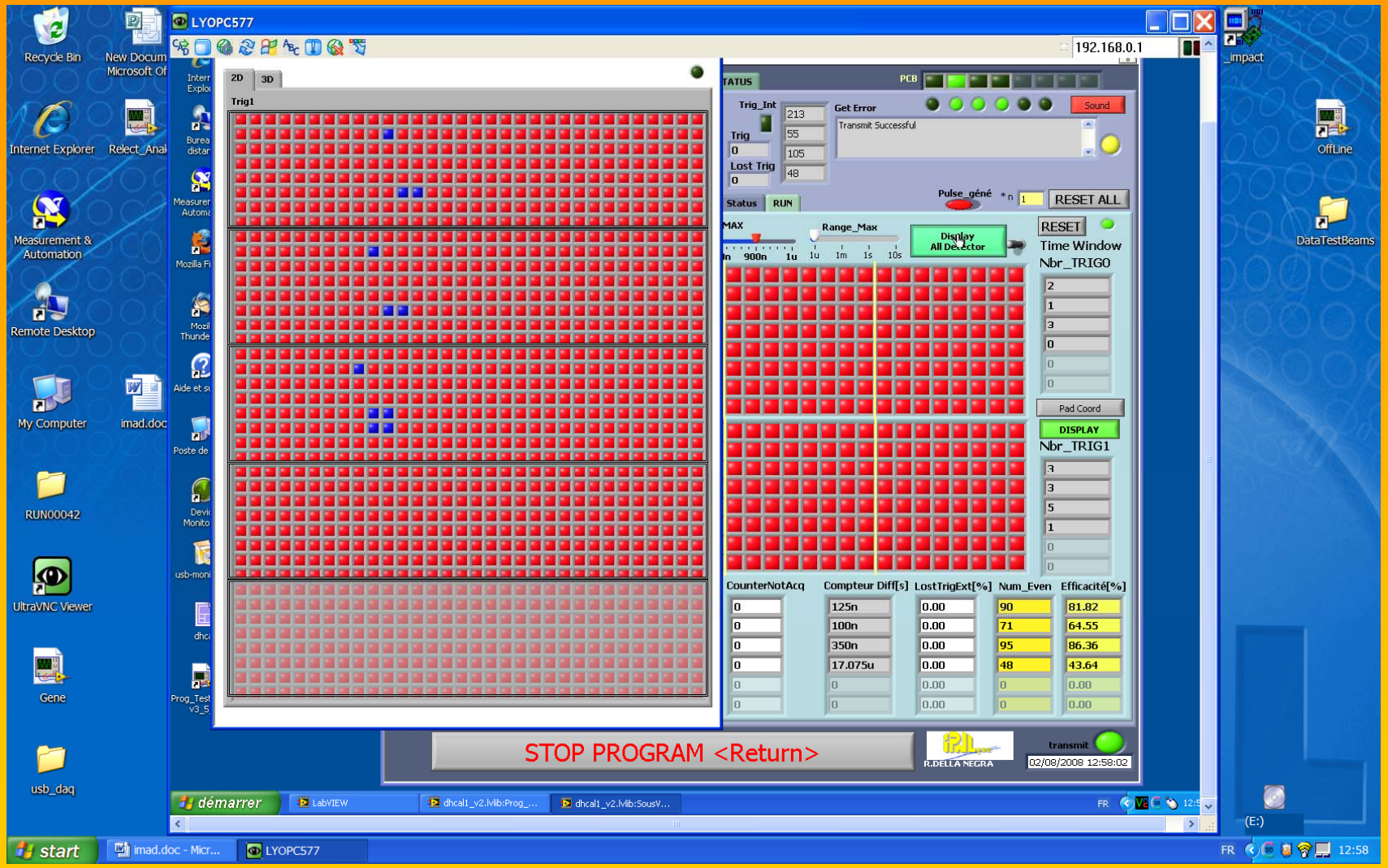
Mini DHCAL exposure to pions

1- Different absorber configurations

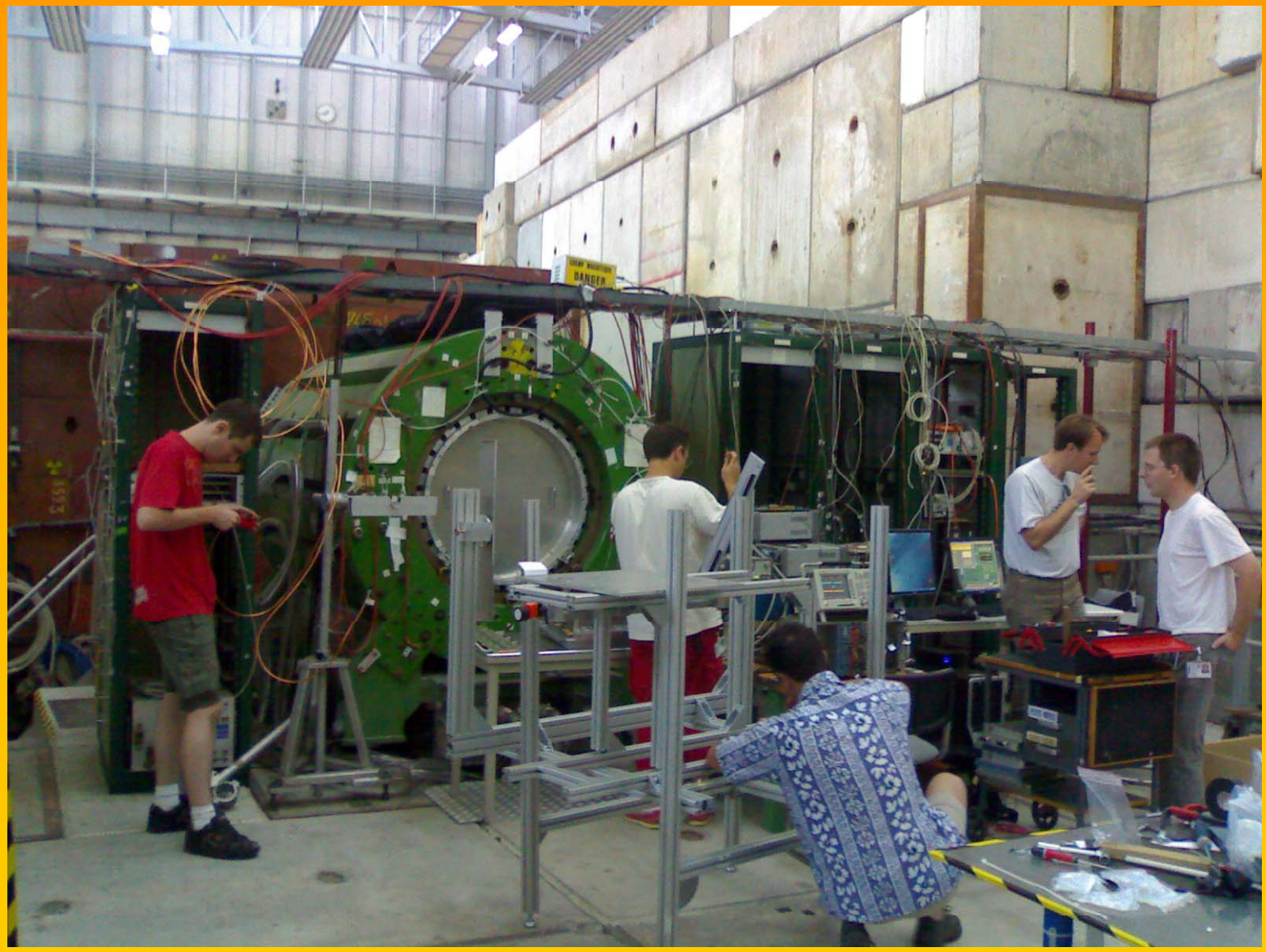
2- Pion energy 3,5,6 GeV



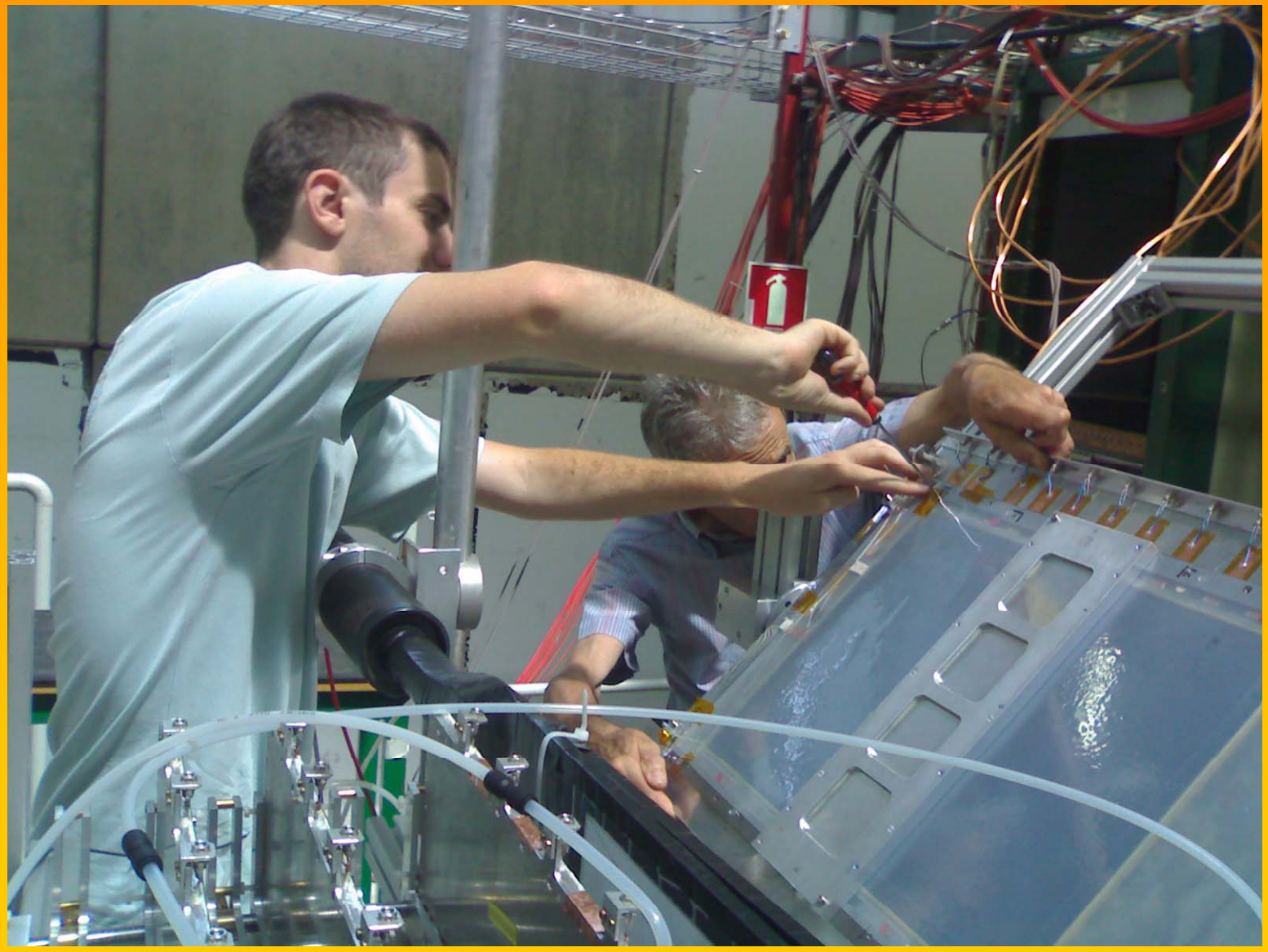
Two particles?



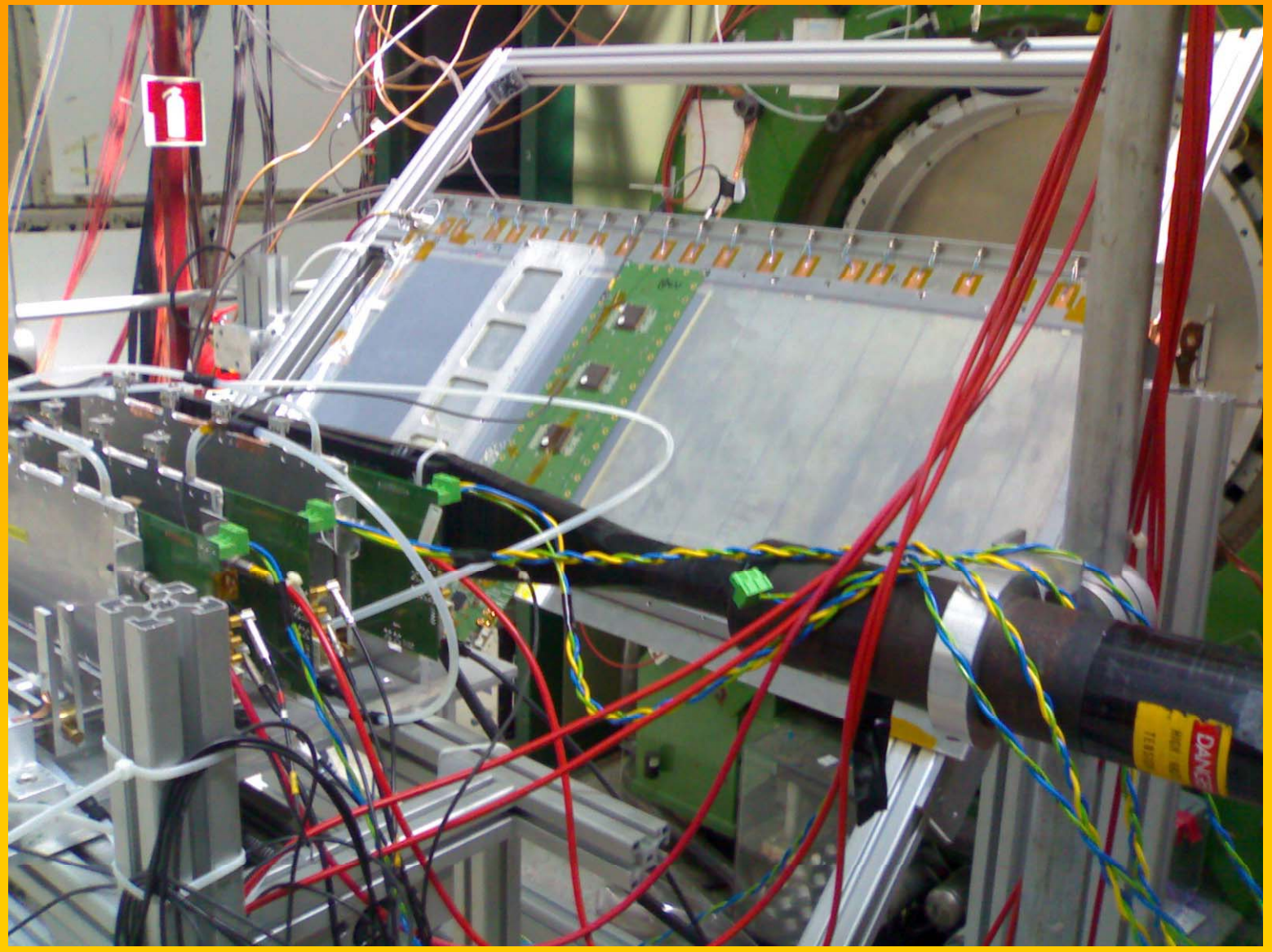
Test @ps-T9



Test @ps-T9

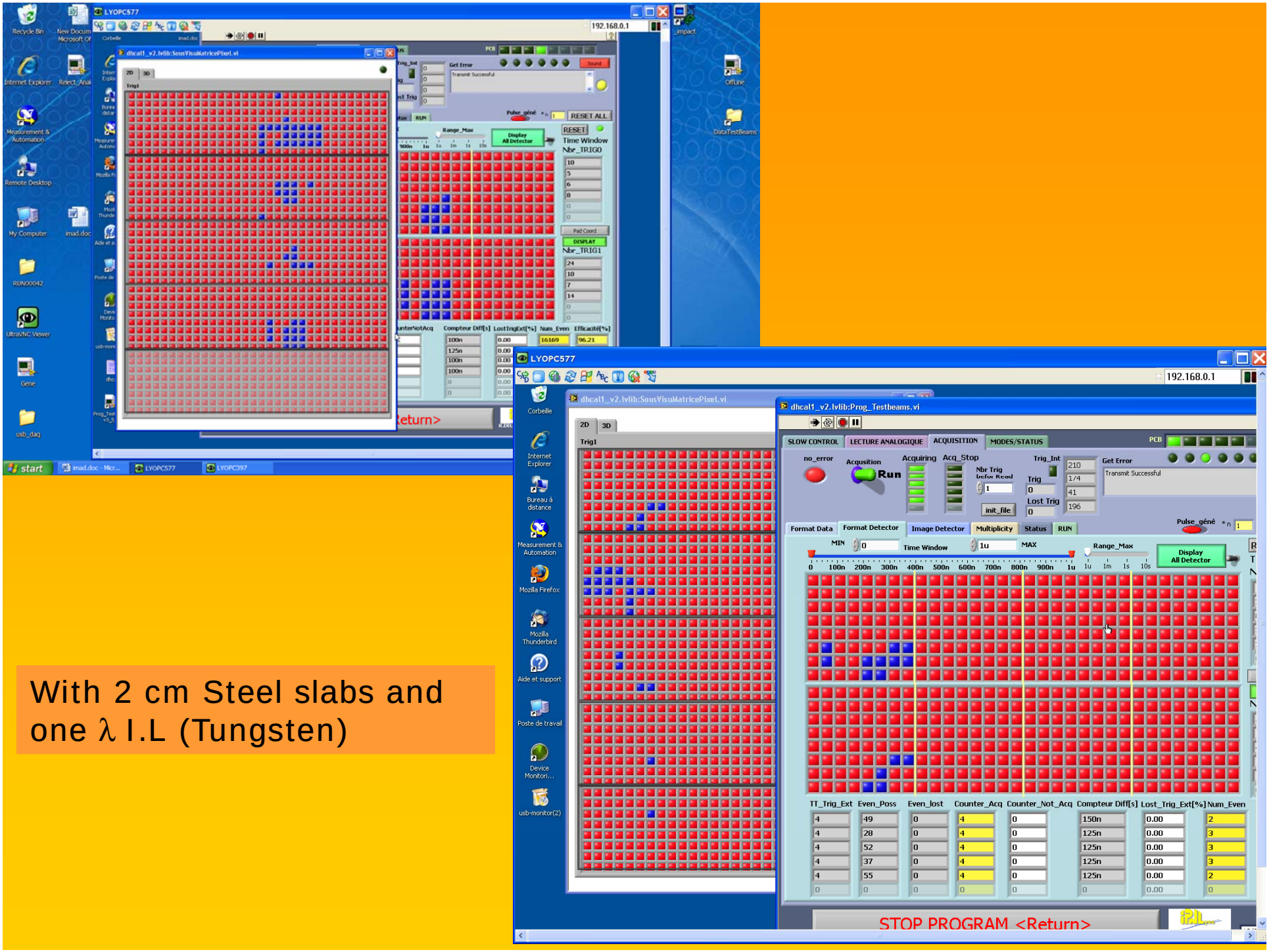


Test @ps-T9



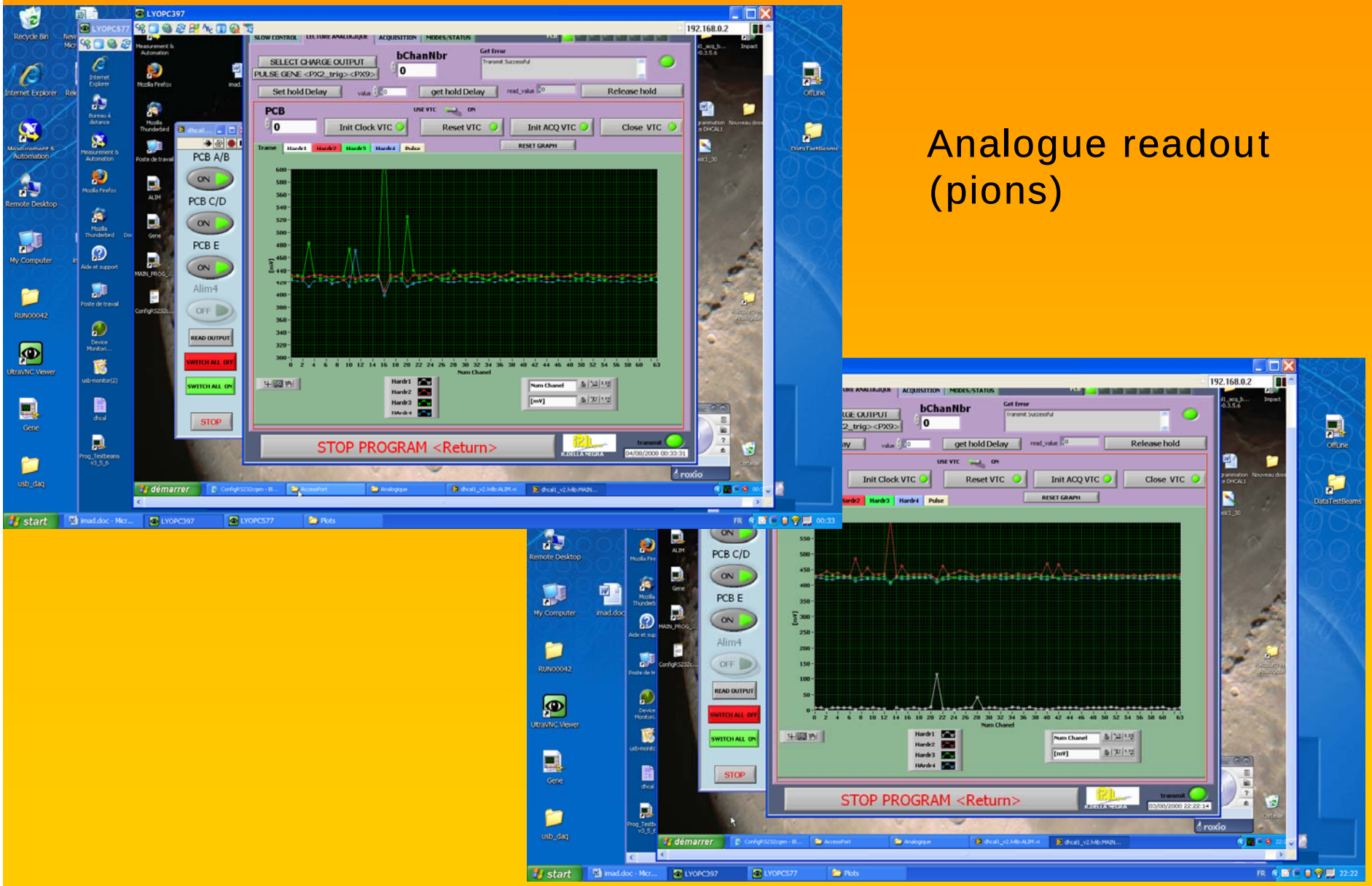
Planning@PS-T9 :

- Perform more measurements with pions up to 12 GeV
- Check the analogue readout
- Try the new detectors (different resistive paintings and gas distribution system) as well as large size detectors



With 2 cm Steel slabs and one λ I.L (Tungsten)

Analogue readout (pions)



Conclusion

- The cern beam test was a real success and this thanks to the CERN technical staff and in particular E.Perez
- Collaboration with Eudet Telescope people was excellent
- We proved for the first time that the detector-embedded “new generation” electronics readout DHCAL is a reality
- We took a lot of good data
- We learnt a lot about our system: detector, electronics…

Perspectives

We obtained two weeks of beam

1 week at H8 (end of October)

1 week at ps9 (7-12 November)

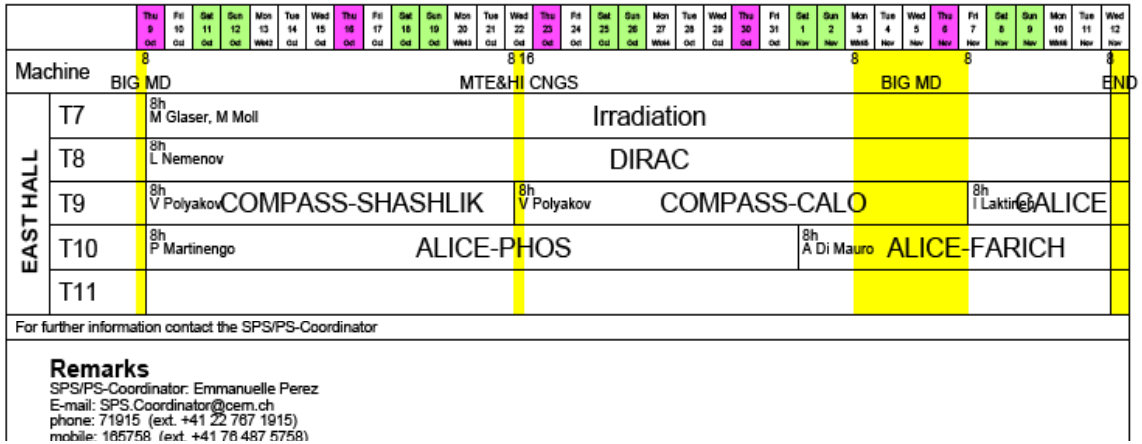
We intend to test the large detector chambers with the appropriate electronics

The two weeks will be shared with other colleagues working on MICROMEGAS development

We required one month beam test period at CERN for 2009

PS Operation — Period 6 2008 Oct 9 to Nov 12

Schedule issue date: 2-September-2008 Version 1.8 (colour code: purple (dark) = scheduling meeting , light green (light) = weekend or holiday)



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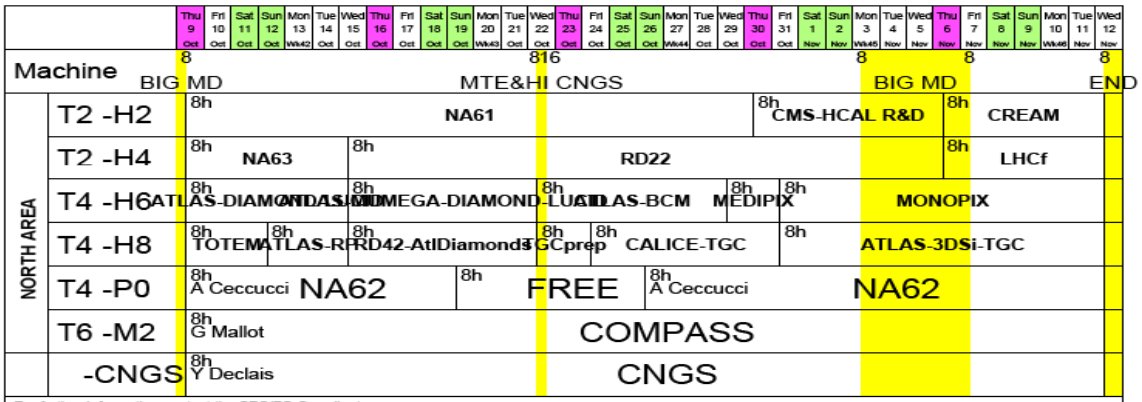

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