GEM test chamber for SAMPA at ALICE TPC upgrade

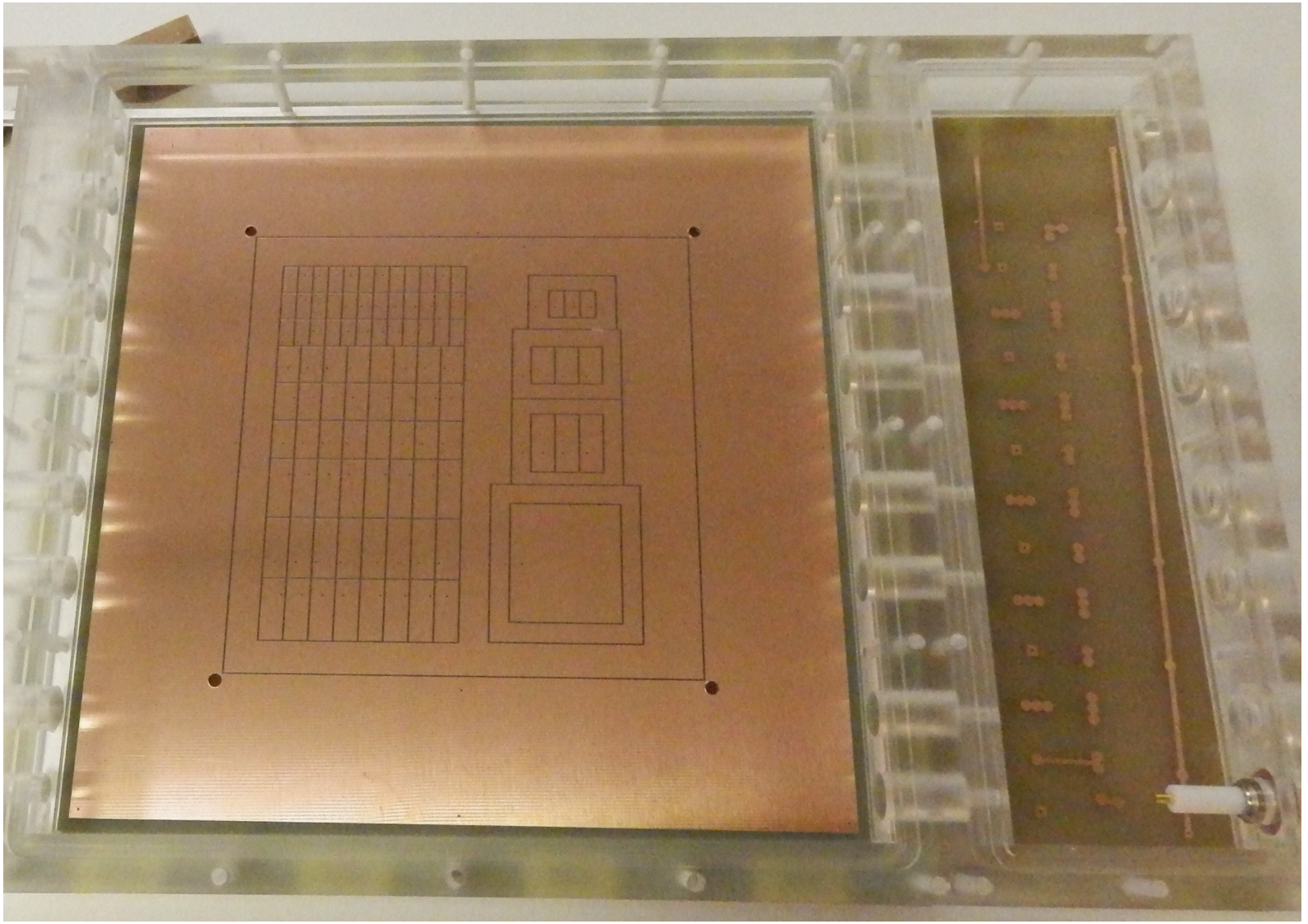
Dezső Varga for the Budapest group

- Detector construction
- Pad layout (roughly) and connection pins
- Actual status, steps to take
- Planned schedule

Outline
(design based on earlier experiences)

- Chamber: highly flexible with 14 HV leads fitted, can be used in any configuration
- Both top and baseplate exchangeable
- Baseplate (anode): pad readout with various pad sizes
- Specifically for ALICE TPC -related tests: 4 GEM-s + Cathode
- HV supplied with a resistor chain

Actual baseplate with pads

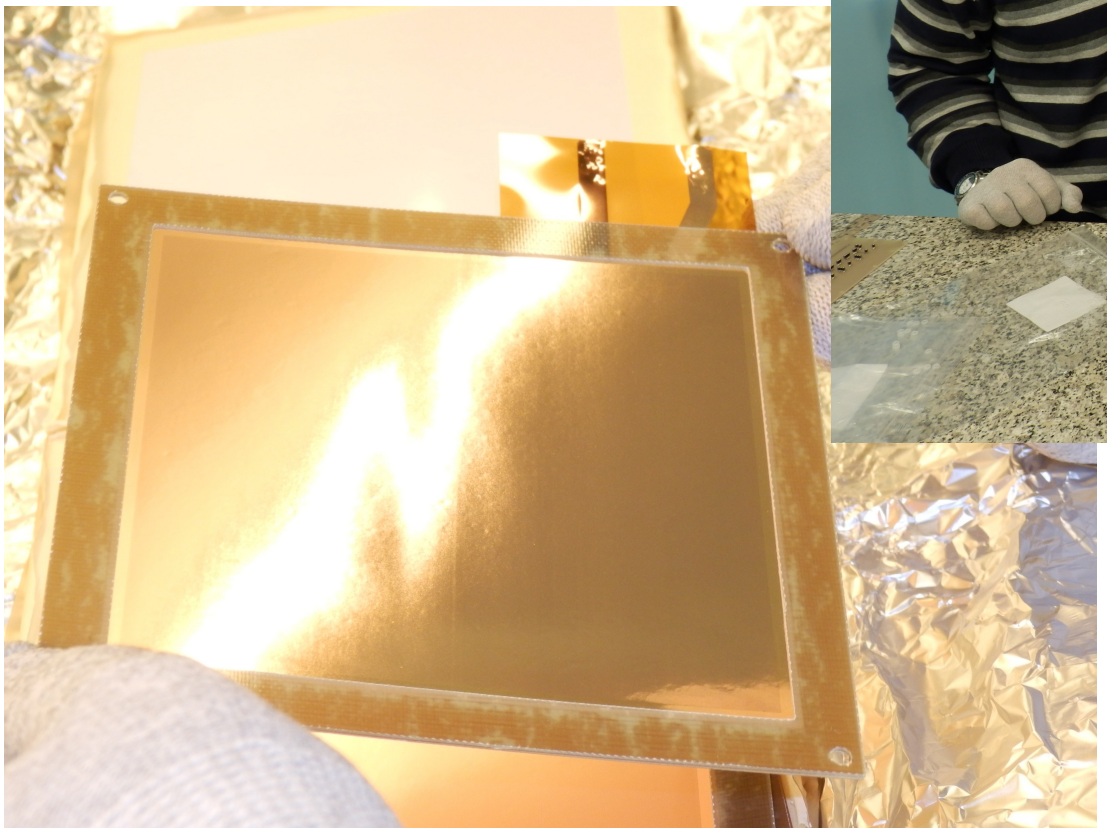


Present **existing** version

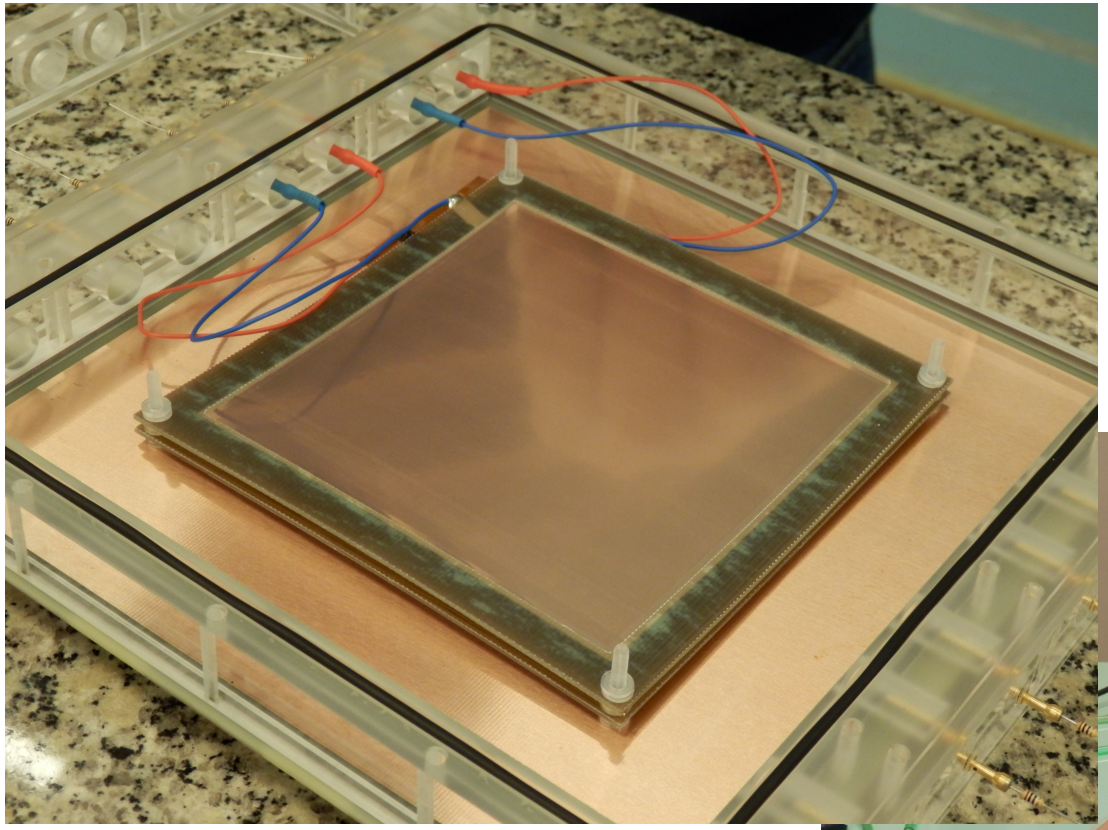
- 3 (Three) GEM setup
- 3.3 mm spacing, equidistant
- 4mm drift for cathode
- Single preamp on the large pad (2.5 cm)

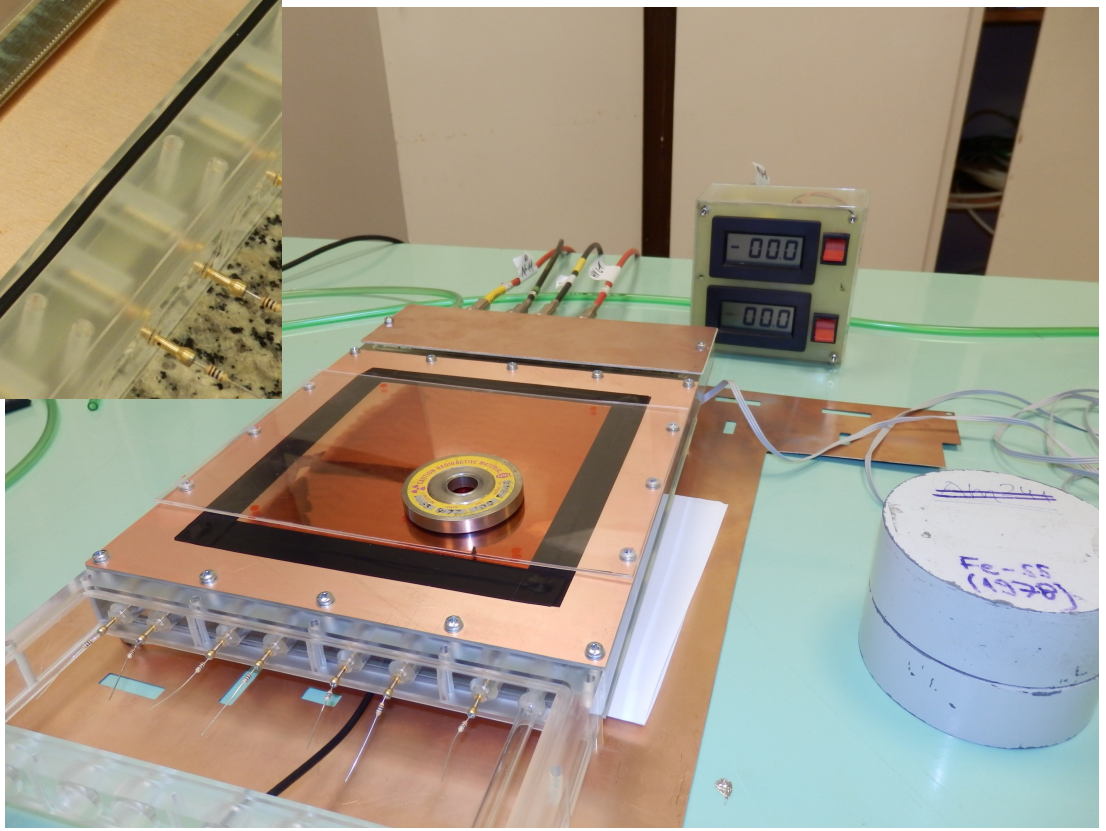
- No sparking has been observed so far, GEM currents below 0.1 nA (“too good”)

Detector assembly pictures

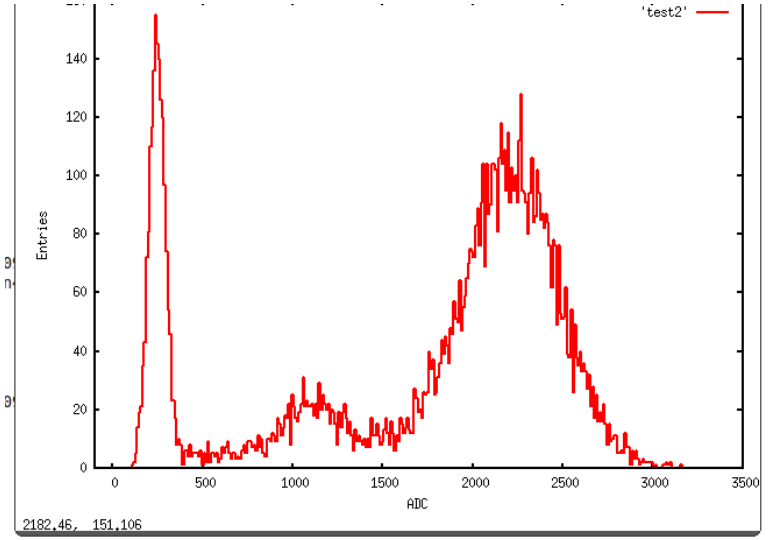


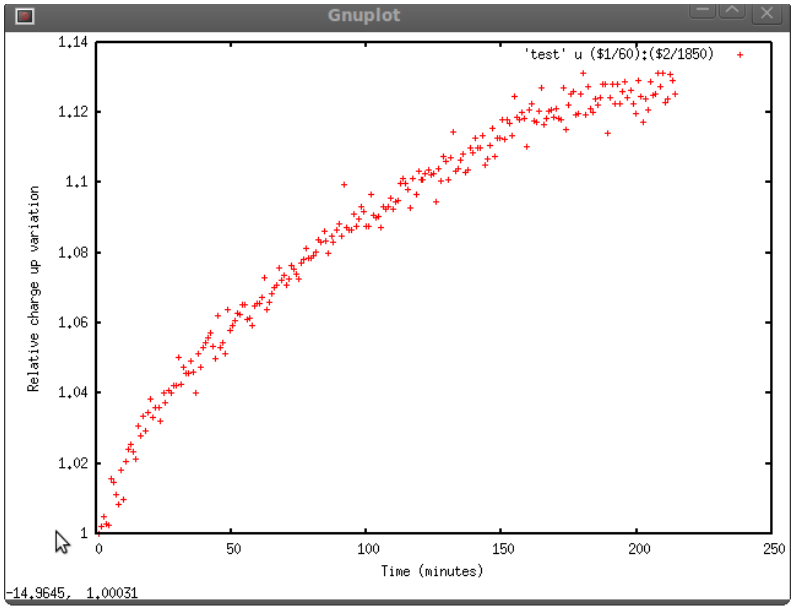
More pictures

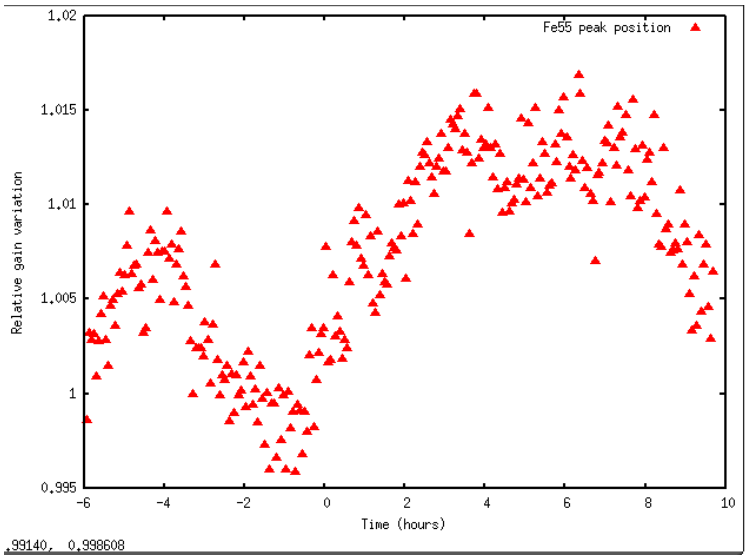




Fe55 spectrum, time dependence







ISSUES

- GEM-s will be ready in CERN only **next week!** Need to find someone for safe transport

- GEM-s bending: frames bend considerably as we got them from CERN: new frame structure has been designed by Gergo, and sent for production (will be ready by Tuesday)

Steps taken, and steps to go

- 3GEM assembly, testing, signal extraction OK
- Gain curves, basic operation confirmation OK
- Absolute gain calibration with Fe55 current measurement technique OK

- Attempt with Strontium90 source + scint. today
- Neon + CO2 + N2 gas mixture tests Monday
- Assembly with well designed spacers Tue-Wed

(Planned schedule – still valid :-)

- Assembly in Budapest: mid Sept – early Oct
- Commissioning in Budapest, preliminary measurements, experience gaining: early Oct
- Transfer to Bergen in mid-Oct with a hopefully plug-and-play, single HV-supplied unit

- Participants: Colleague from Bergen (Kristian Philip Engeseth); from Budapest: DV, Gergo Hamar; ALICE coordinators G. G. Barnaföldi, Ganesh Tambave, Dieter Röhrich)