# Data-driven electronics for ILC TPC

## Status report

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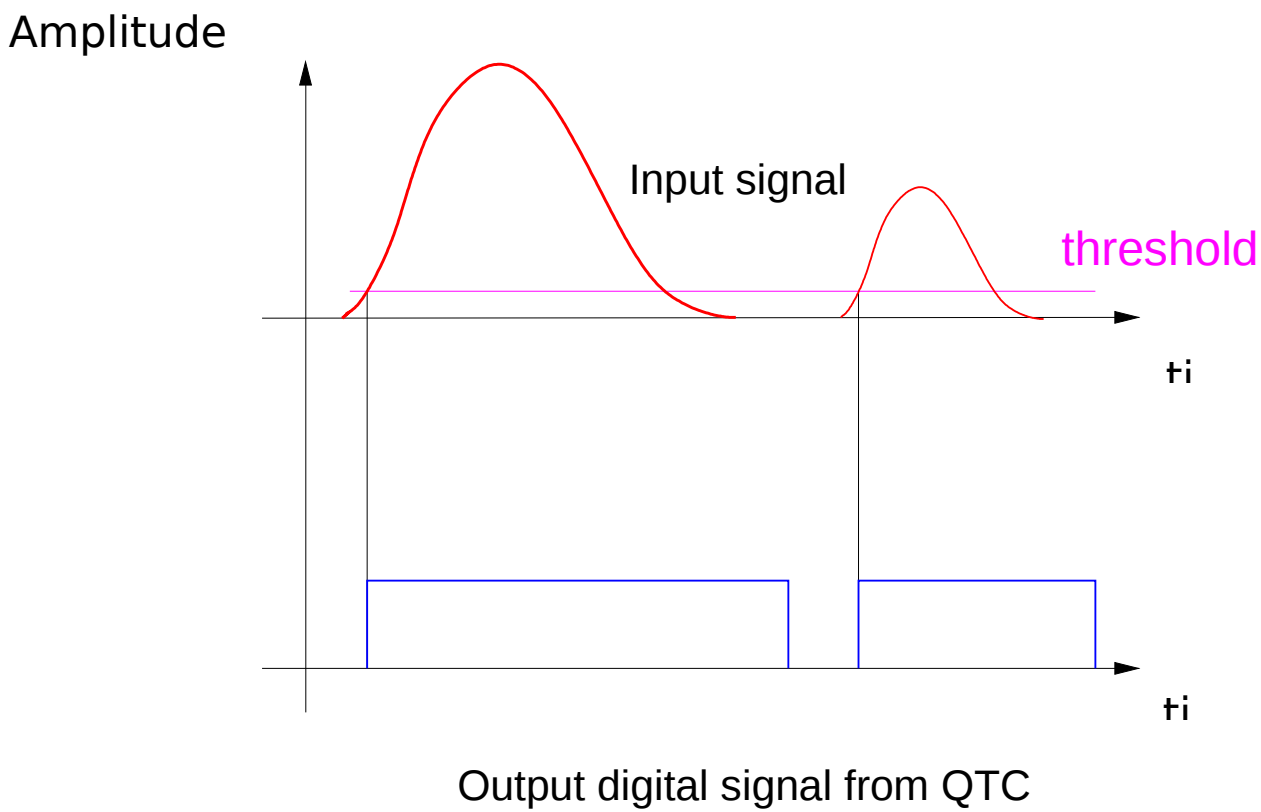
LCTPC Collaboration meeting 21-22 September 2009

# Data-driven Electronics

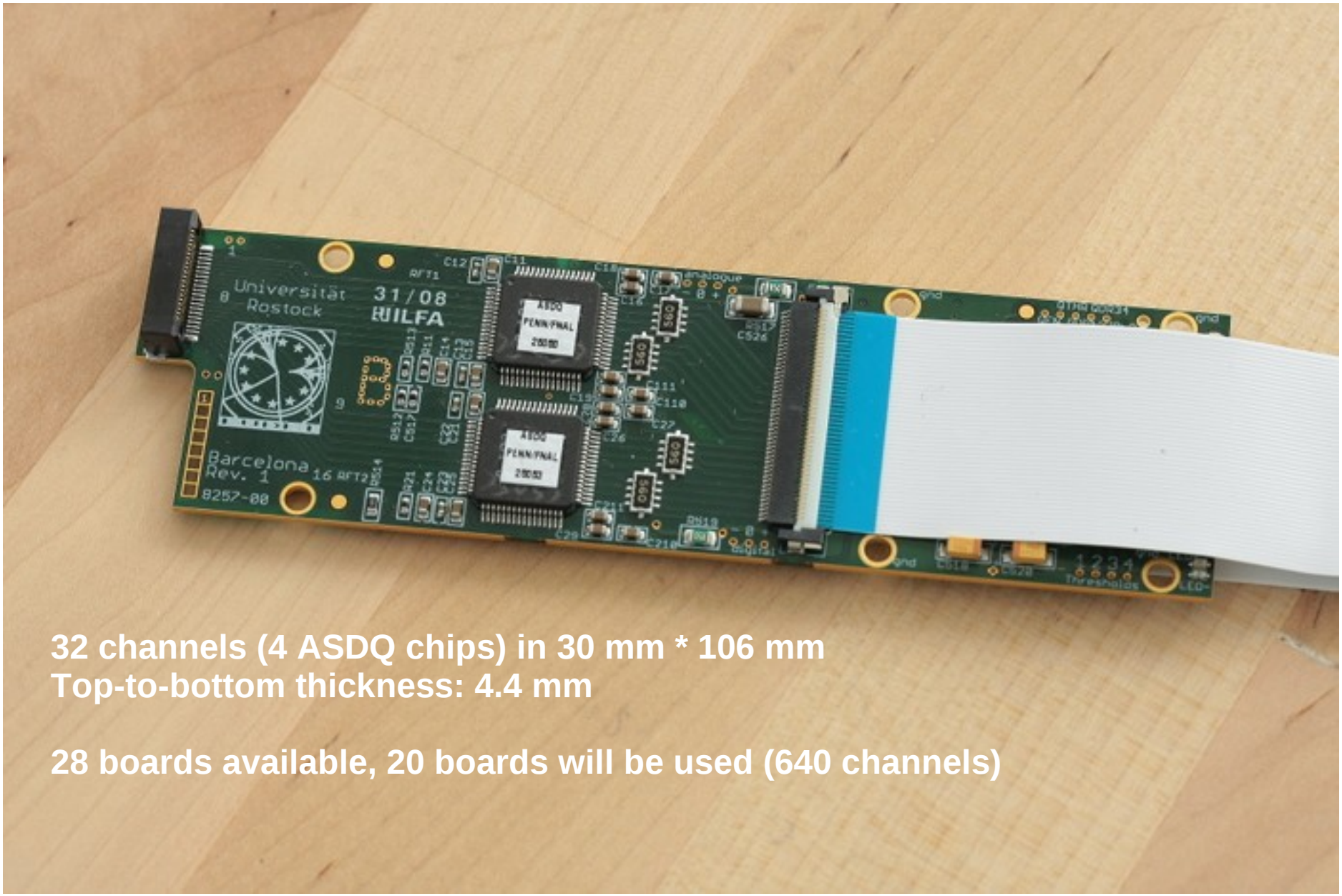



Data zero suppression by analogue data processing.

Here example with threshold timing and charge-to-time conversion.

- The time of arrival is derived using the leading edge discriminator.
- The charge of the input signal is encoded into the width of output digital pulse.

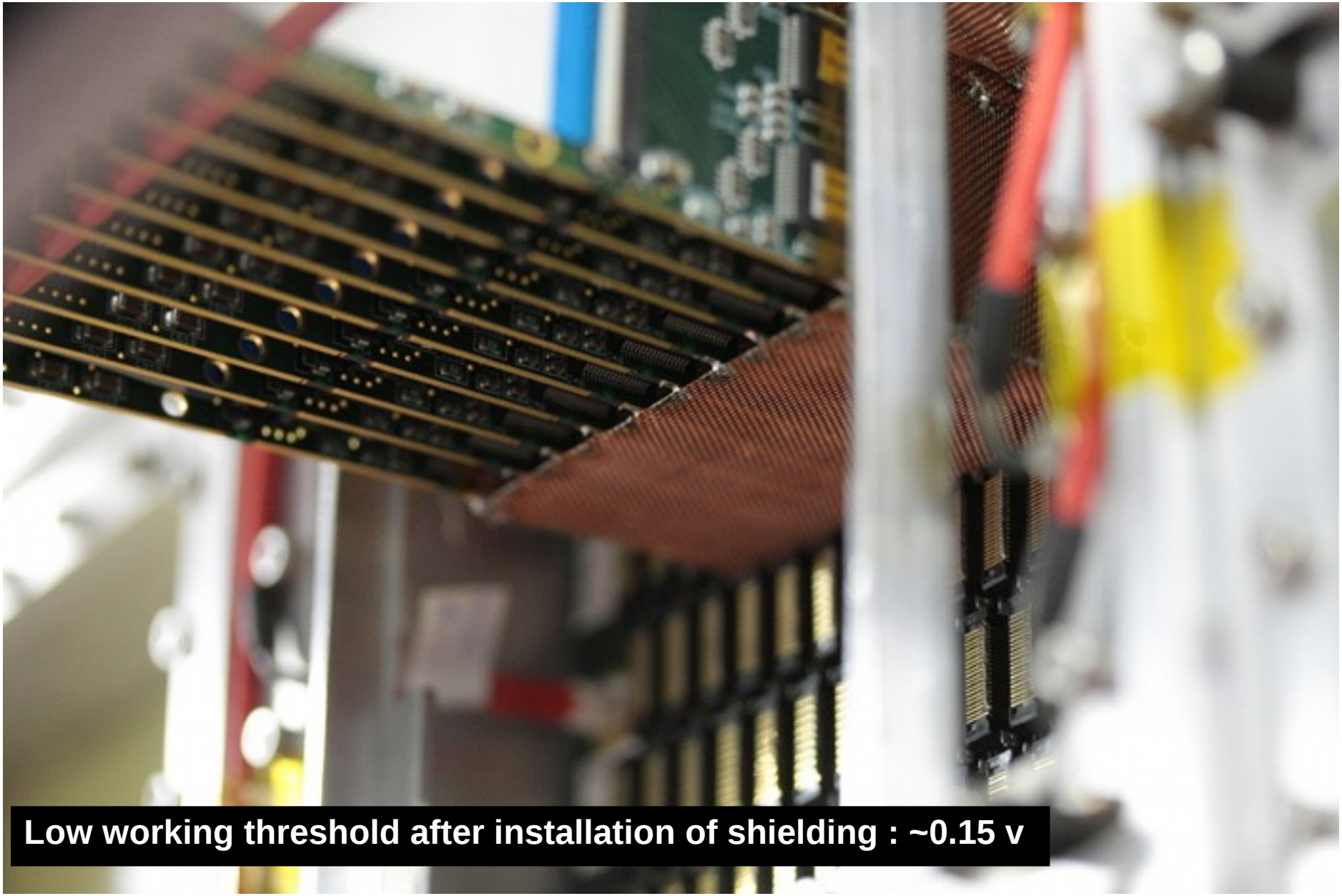
# “Barcelona” Board




**32 channels (4 ASDQ chips) in 30 mm * 106 mm**
**Top-to-bottom thickness: 4.4 mm**

**28 boards available, 20 boards will be used (640 channels)**

# Electronics on a GEM Module

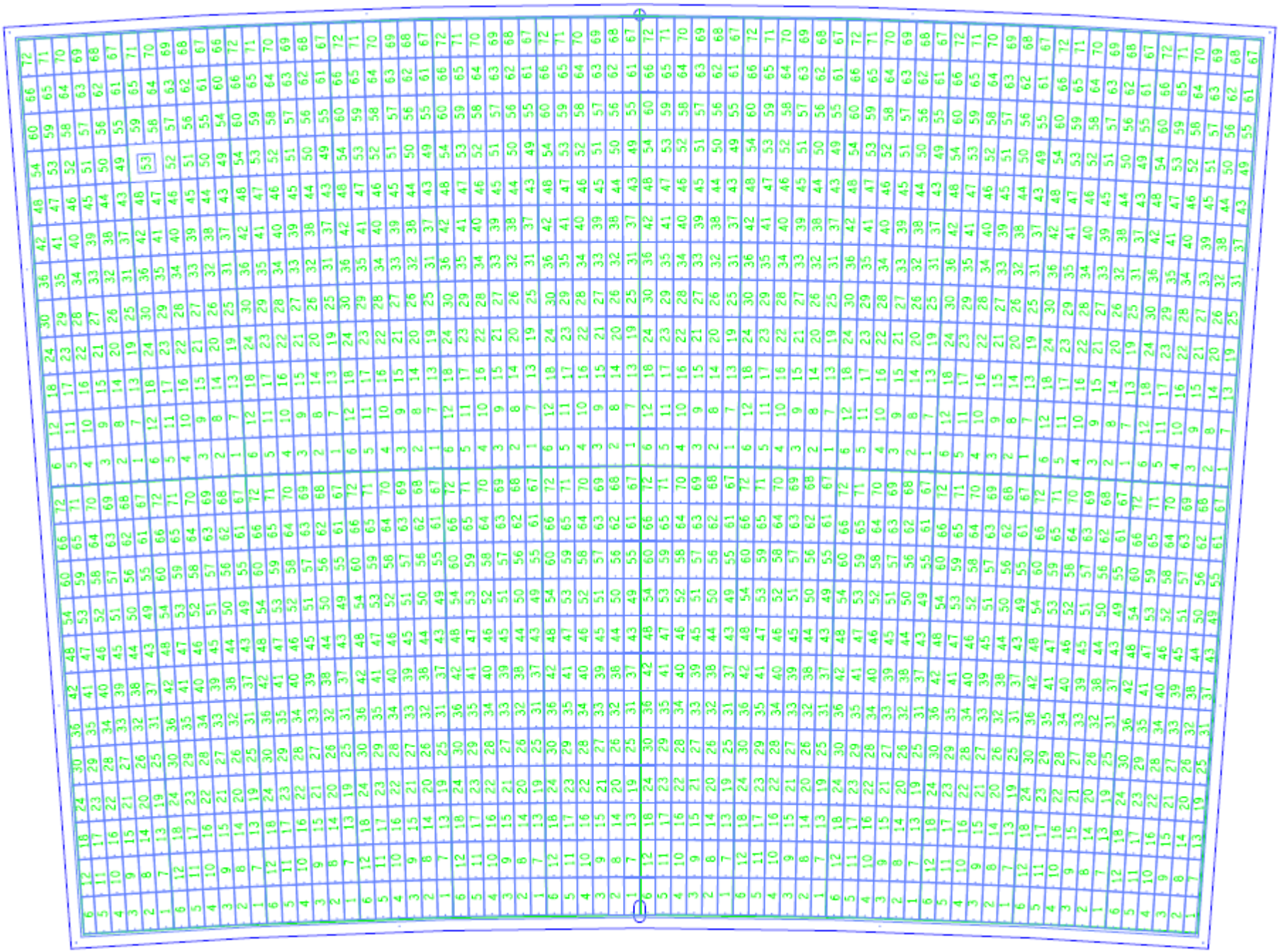


**Low working threshold after installation of shielding : ~0.15 v**

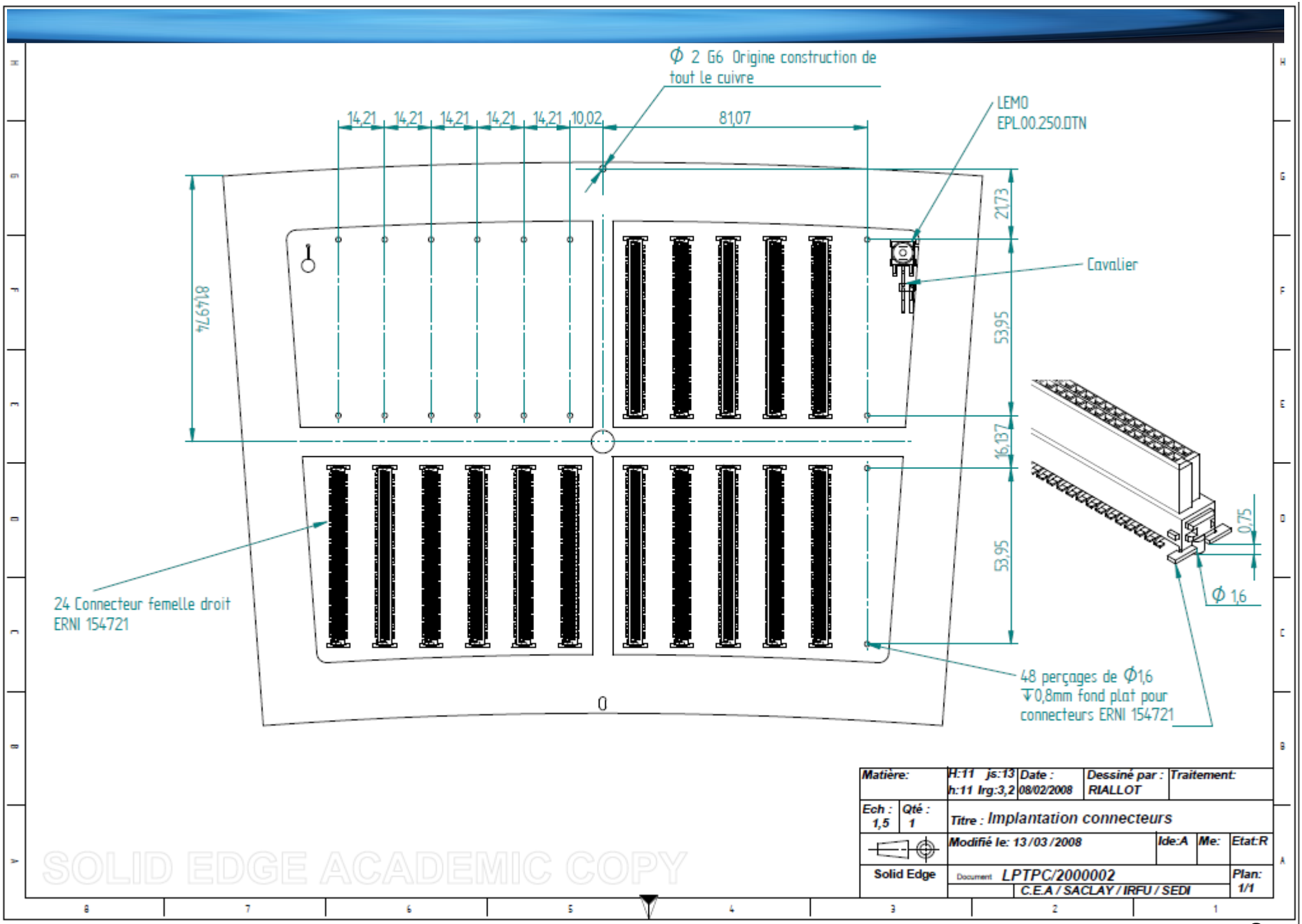
# Electronics on a GEM Module

# Complete Setup

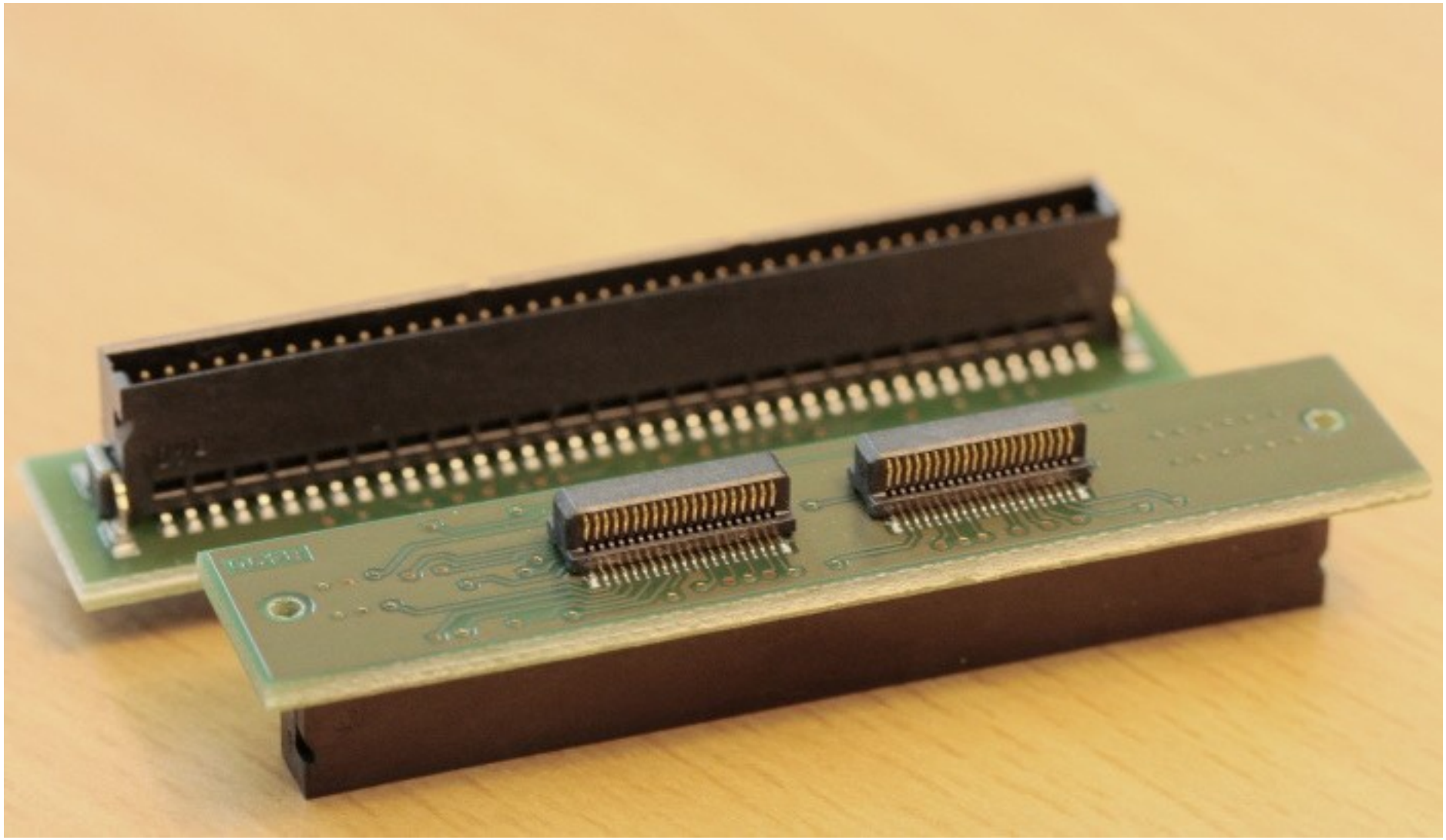
# Pads of Micromegas Module



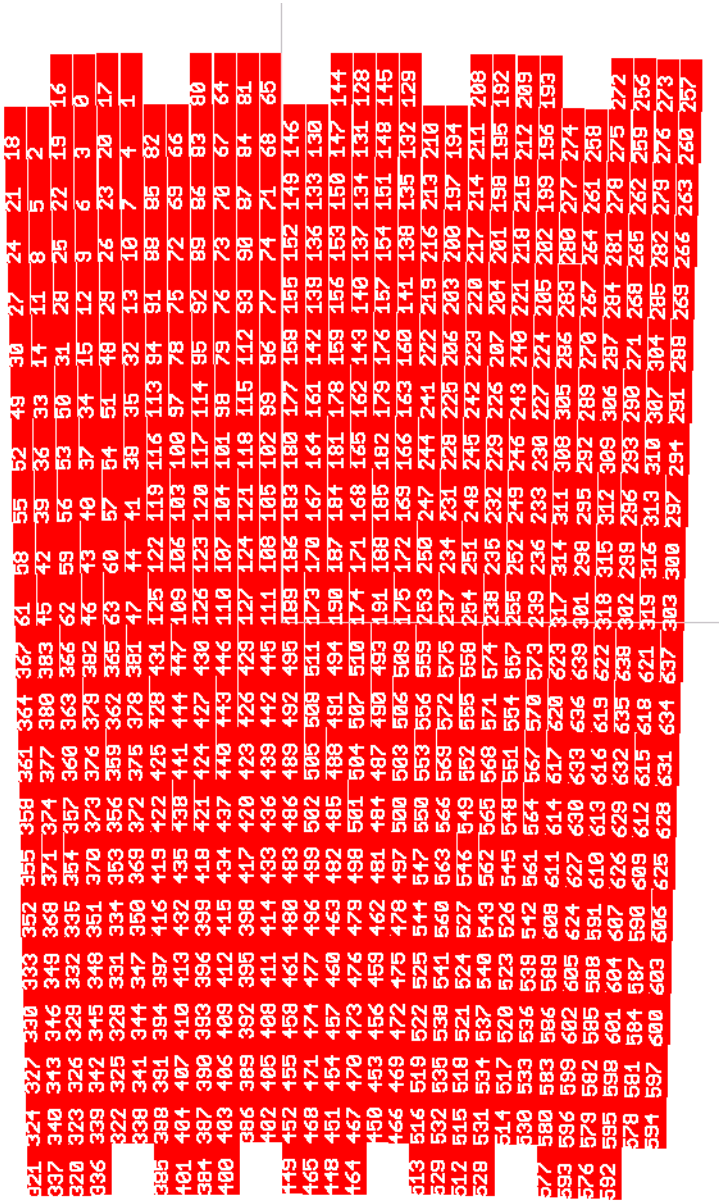
# Connectors of Micromegas Module



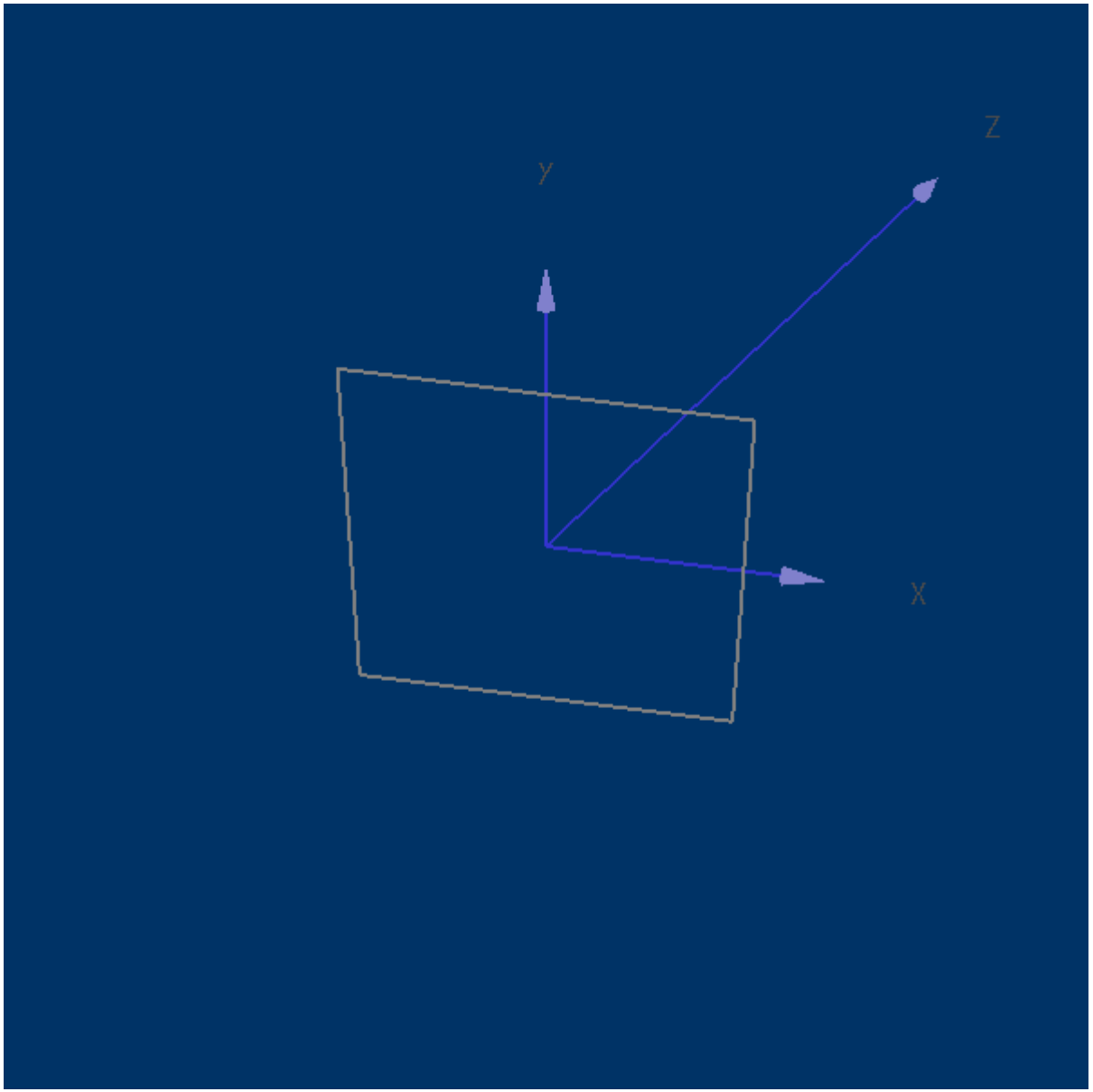
# Adapters for a Micromegas Module



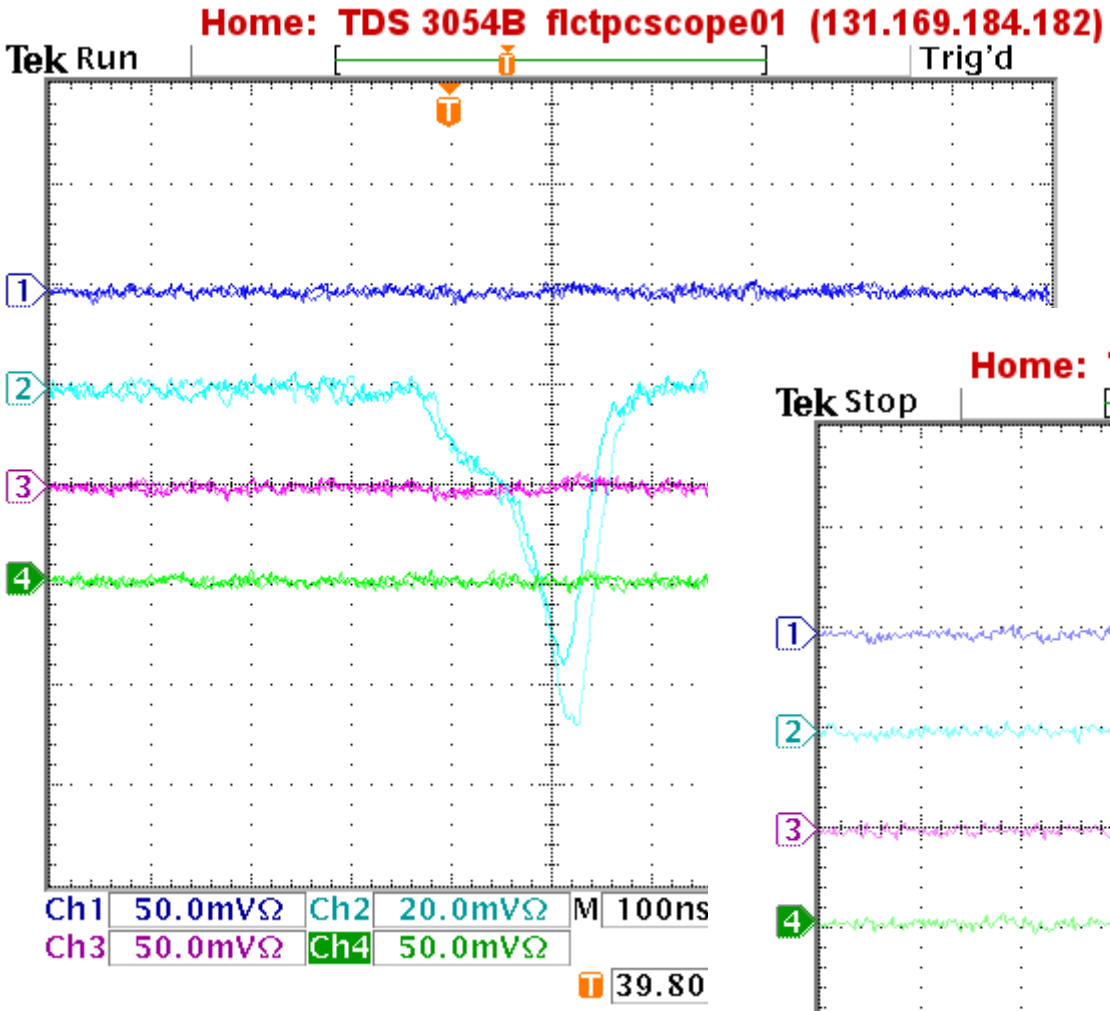
# Pad-map of a Micromegas Module

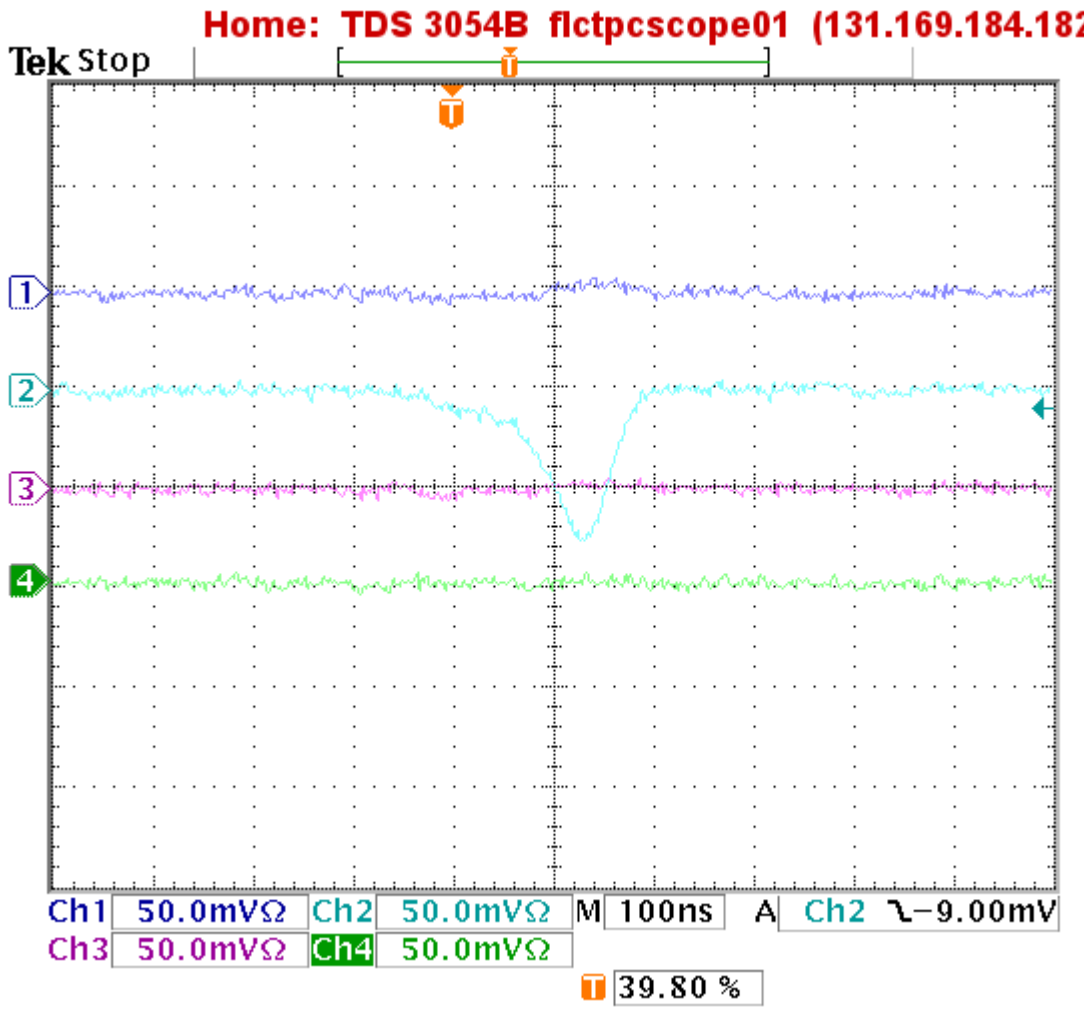


# 3D “event” Display (CED-based)



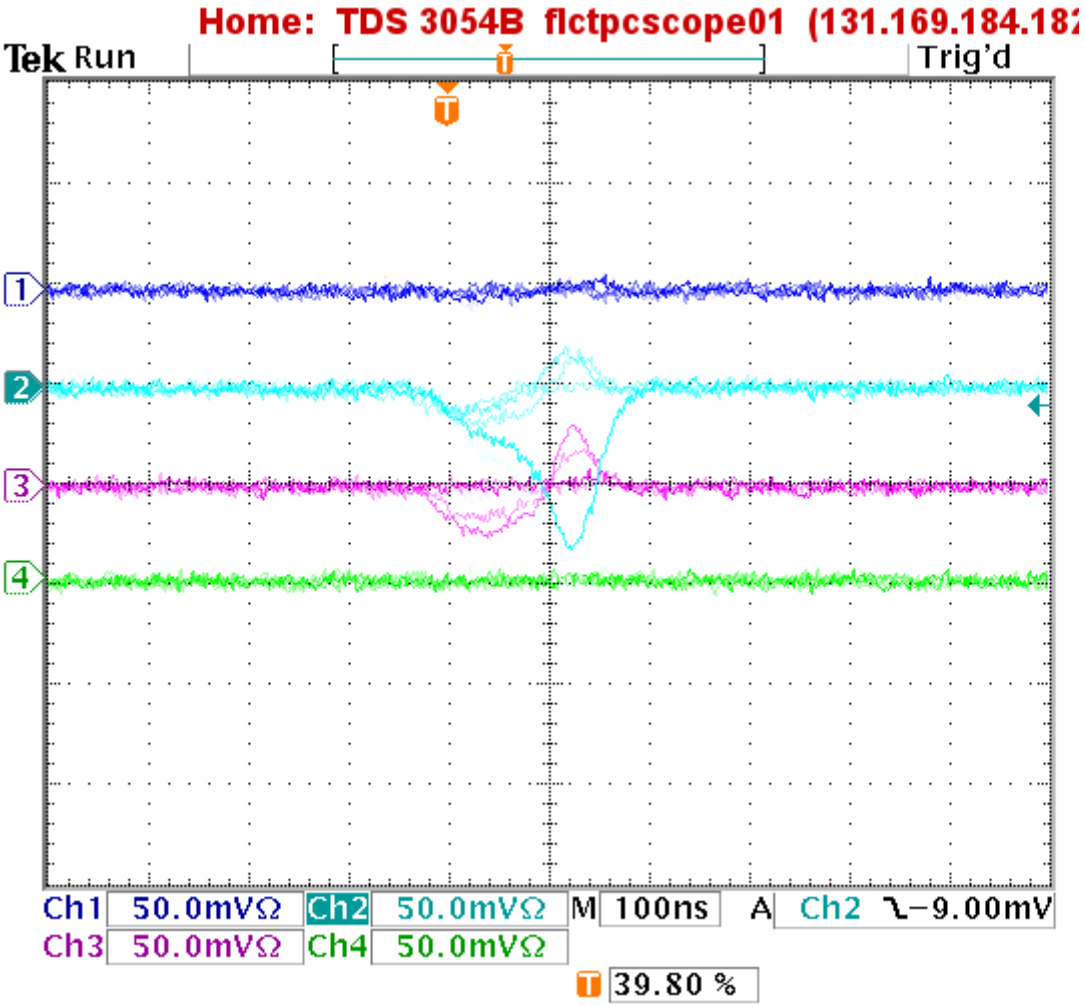
# Signals from a GEM (!) Detector




**3GEM, 5mm induction gap**

# Signals from a GEM (!) Detector



# Summary and Outlook

No results with JGEM, yet. Higher gas gain would be necessary.
Currently, VME crate is not prepared to work in B-field.

Micromegas Module will be used next time.
Higher gas gains possible. Larger area can be covered.

Next step:
Threshold / efficiency scan
Charge-to-time conversion parameter (QDR) scan
Z-scan in LPTPC.

Signal simulation for GEM and Micromegas