

Noise measurements with Multiplexer and new CERN-type cables

**R.Dell'Orso, S.Dutta, A.Kyriakis,
A.Giassi, R.Cecchi**

INFN Sezione di PISA

Index

- **Module readout with CMS like system**
 - **CERN cables (thanks to P.Siegrist)**
 - **MULTIPLEXER (thanks to T.Weiler)**
- **Goal: to define the final length of cables for the long term test**
- **Only one FED channel (2 APV25 chips) selected for the test**

Cables

- **Trigger/Clock 50 cm (CERN cable)**



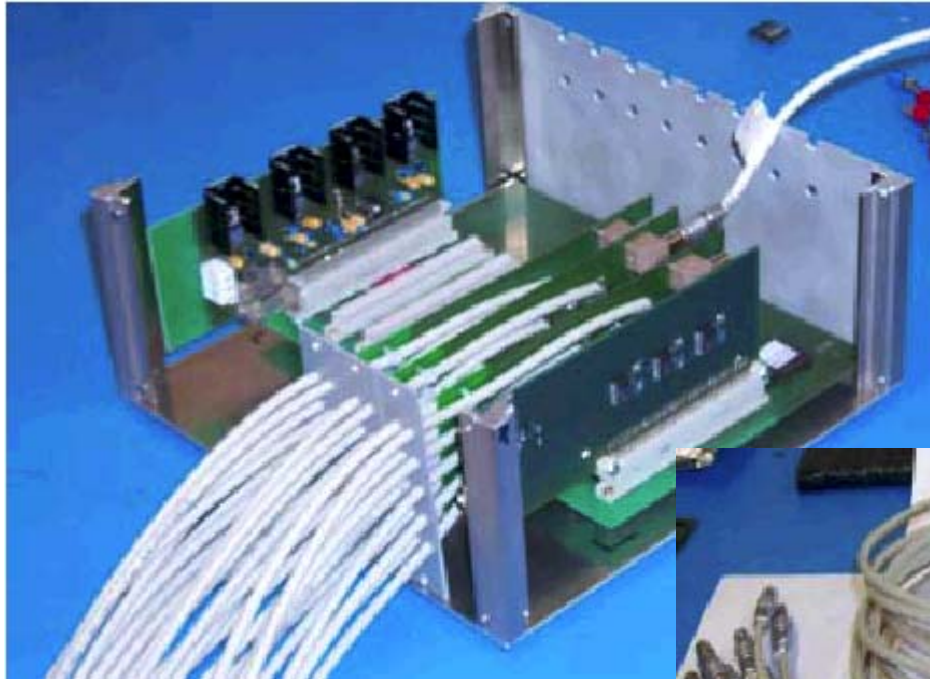
- **Standard cable (2.2 m - without MUX)**
- **Multiplexer (1.2 m) + 2.3 m (CERN cable)**
- **Multiplexer (1.2 m) + 3.5 m (from Patrice)**



Cable characteristics

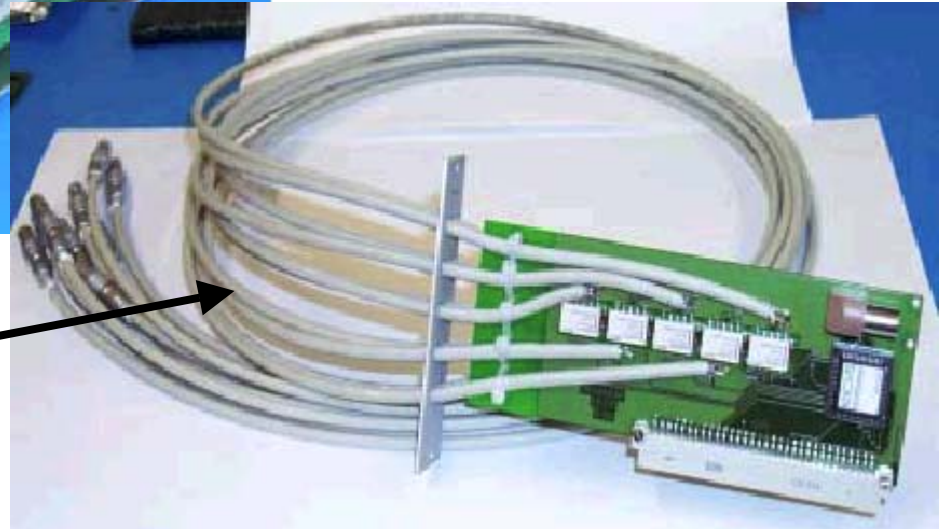
- **SCEM 04.21.51.702.6**
- **Twisted pair, screeded cables**
- **Cross section: 0.05 mm²**
- **Mutual capacitance: 60 nF/Km**
- **Impedance: 110 Ohm**
- **Linear resistance: 380 Ohm/Km**
- **Price: 2.9 CHF/m**

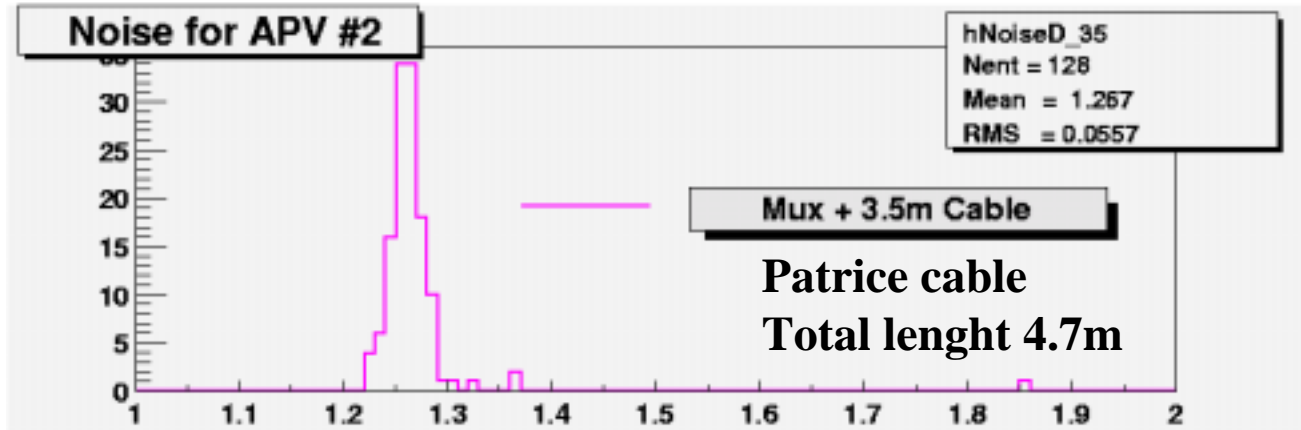
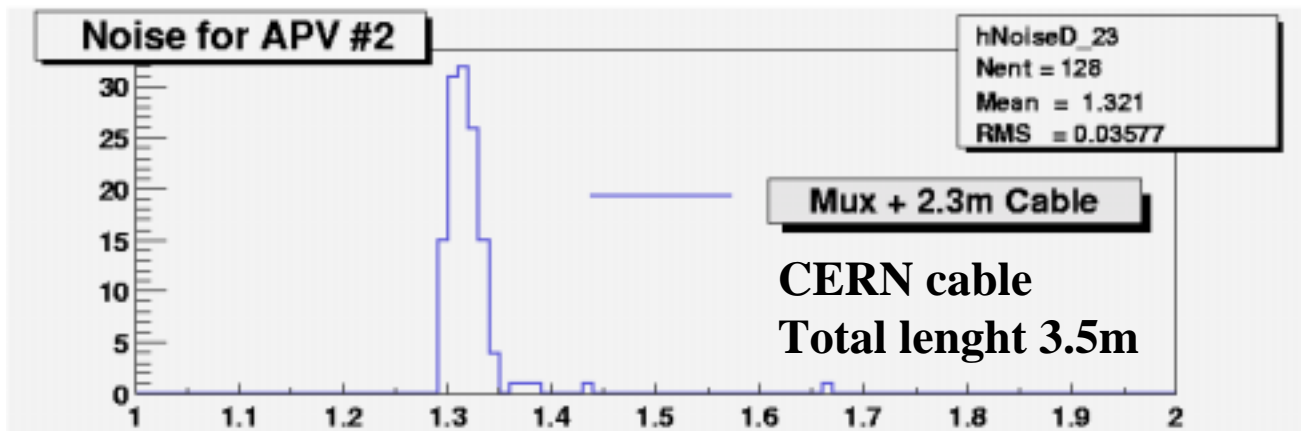
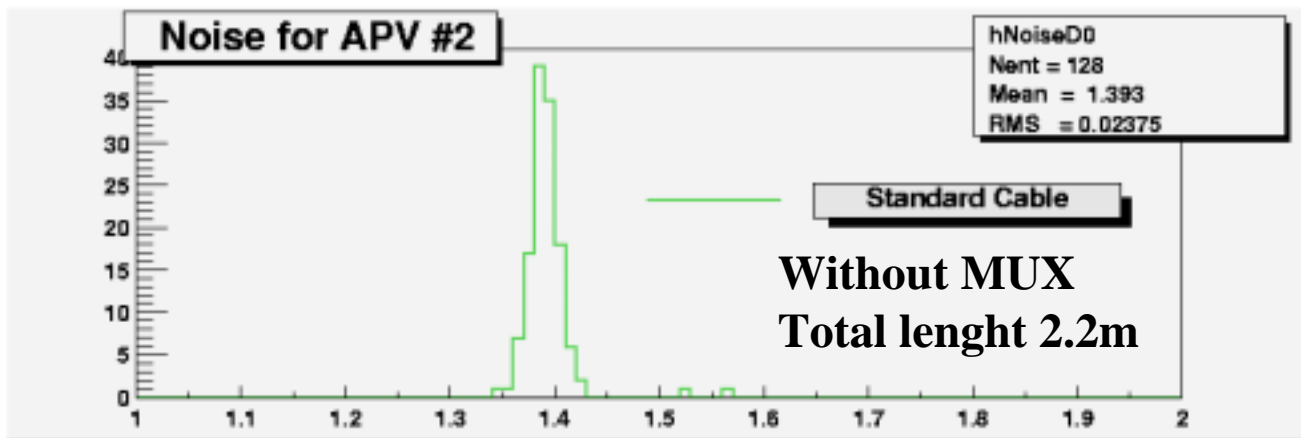
Multiplexer



**Communication through
an I2C interface (Pisa) via
PC parallel port**

1.2 meter cables





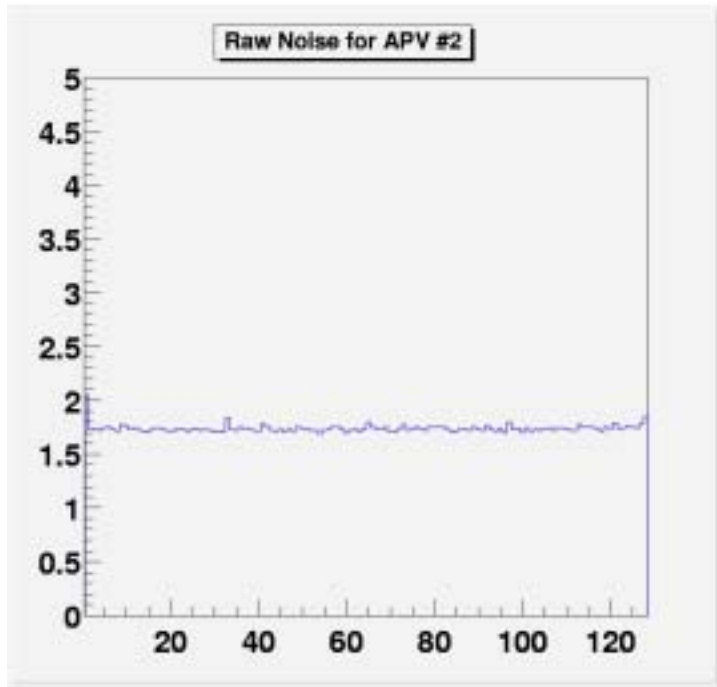
**Comparison
of Noise
after CM
subtraction**

Peak Mode

**Module
TIB23**

**Vbias =
300V**

Noise Deconvolution Mode

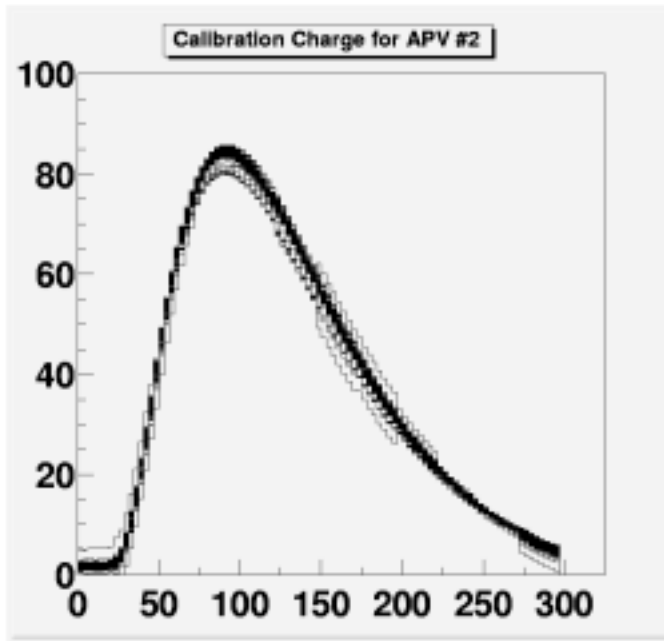


	Raw	CM Subtracted
Standard	1.82	1.74
Mux + 2.3m	1.74	1.64
Mux + 3.5m	1.75	1.55

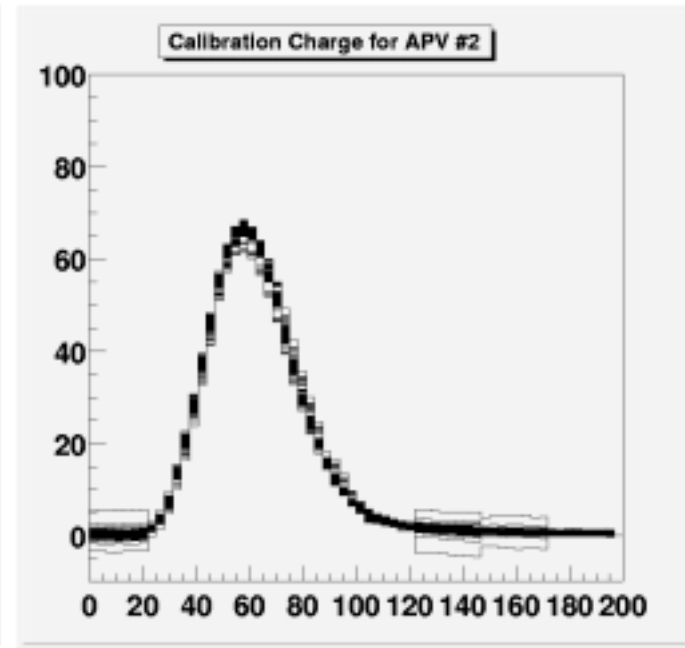
Noise in ADC counts
Vbias = 300V

Calibration

Multiplexer + 2.3m CERN cable

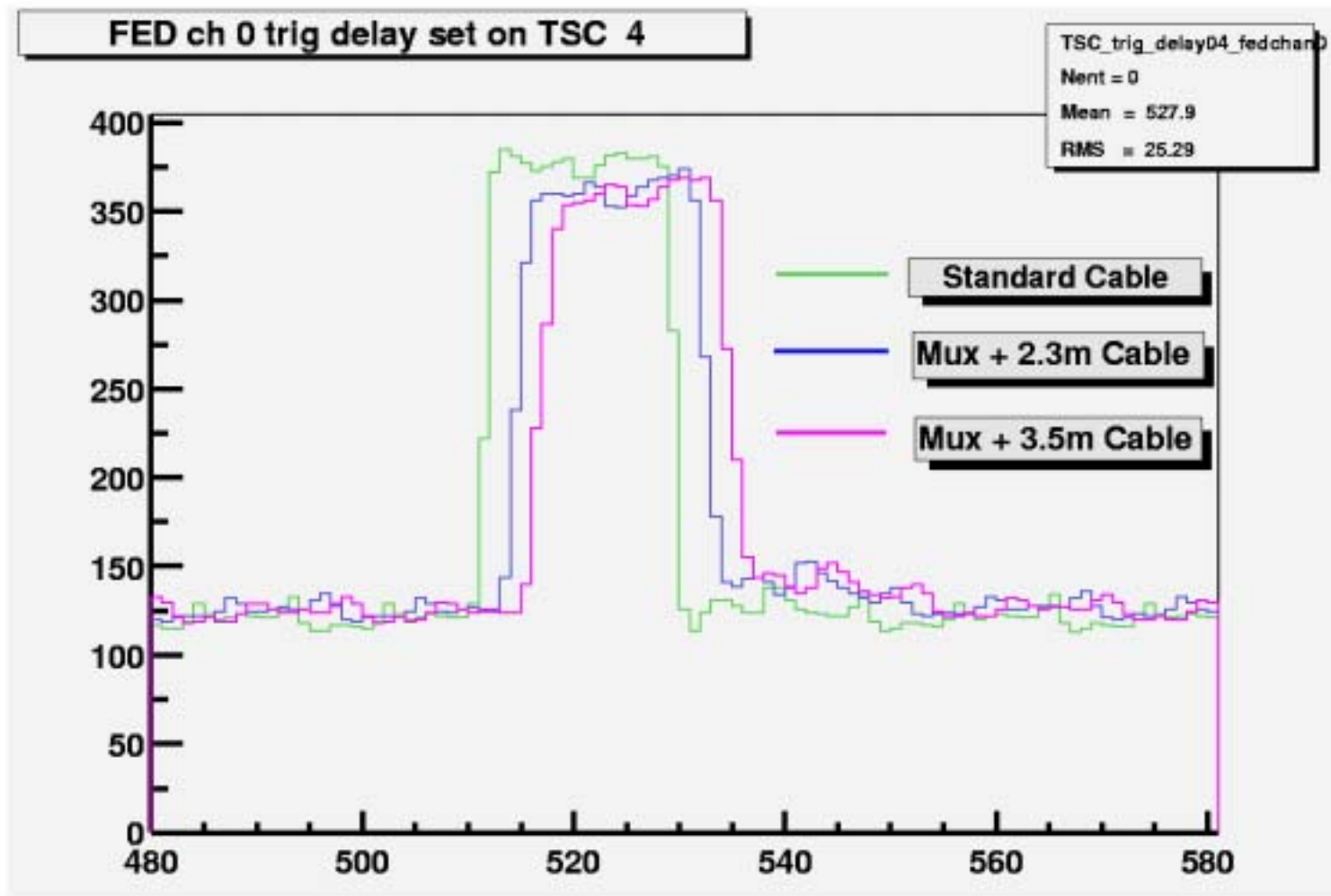


Peak mode



Deconvolution mode

Tick Mark reconstruction using TuneFed



Conclusions

- **Good performances with Multiplexer + 2.3m of CERN cable (total length 3.5m)**
- **A cable length of 3.5m (total length 4.7m) starts to become critical:**
 - **Tick mark flat region: 42 ns**
- **Results based on 1 MUX/FED channel**