First results from the PEBS testbeam at CERN 23-31 October 2007

Henning Gast

Acknowledgments:

Testbeam crew:
Bastian Beischer, Chan Hoon Chung, Roman Greim, Thomas Kirn, Sonia Natale, Gregorio Roper, Georg Schwering, Nikolas Zimmermann

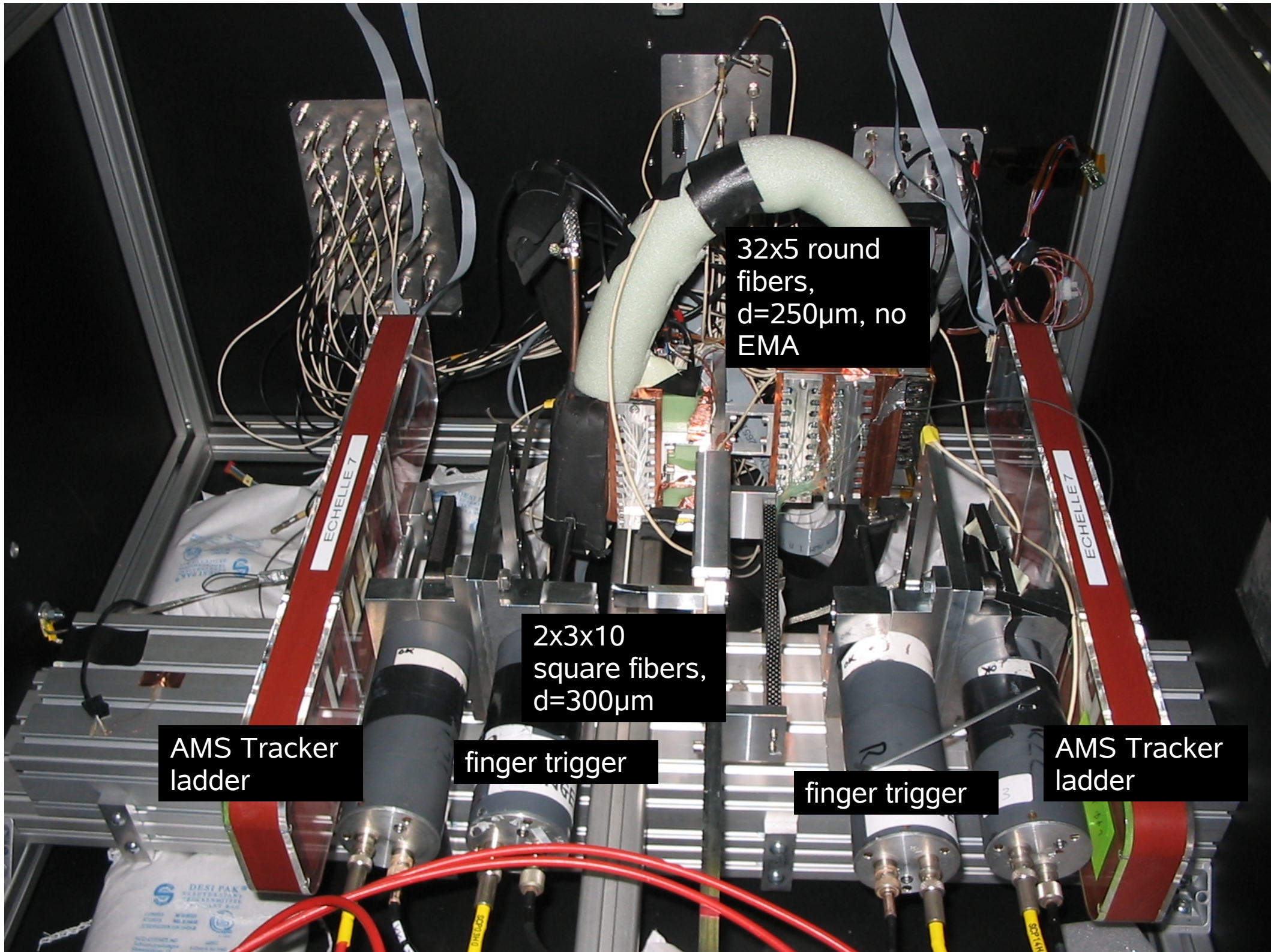
Slow control:
Philip von Doetinchem

Aachen workshops:
B. Debye, M. Dohmen, F. Gillessen, H. Hammers, W. Karpinski, G. Kirchhoff, F. Müller, H. Müller, M. Wlochal

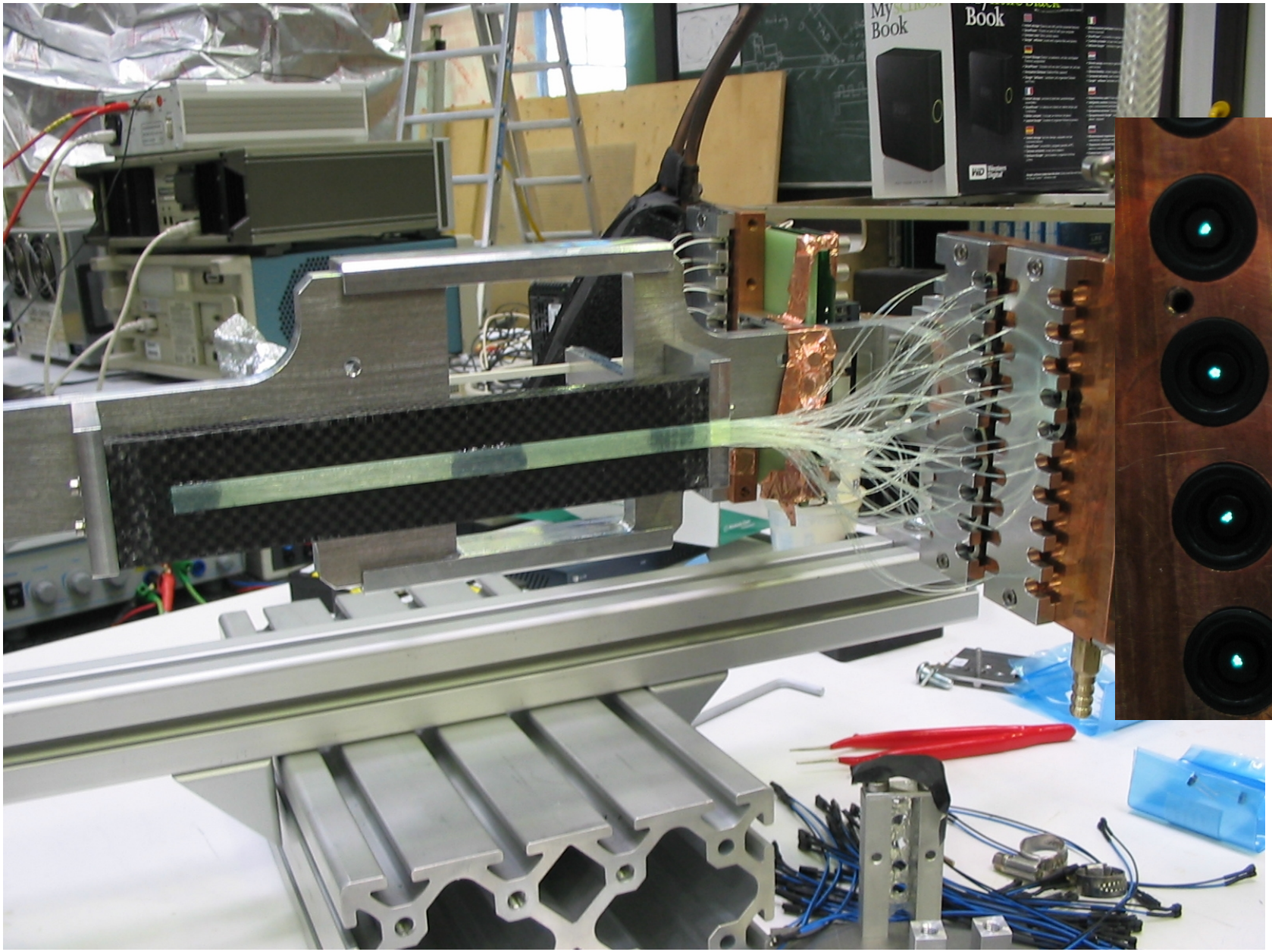
INFN Perugia:
Giovanni Ambrosi, Philippe Azzarello

CERN T9:
Lau Gatignon

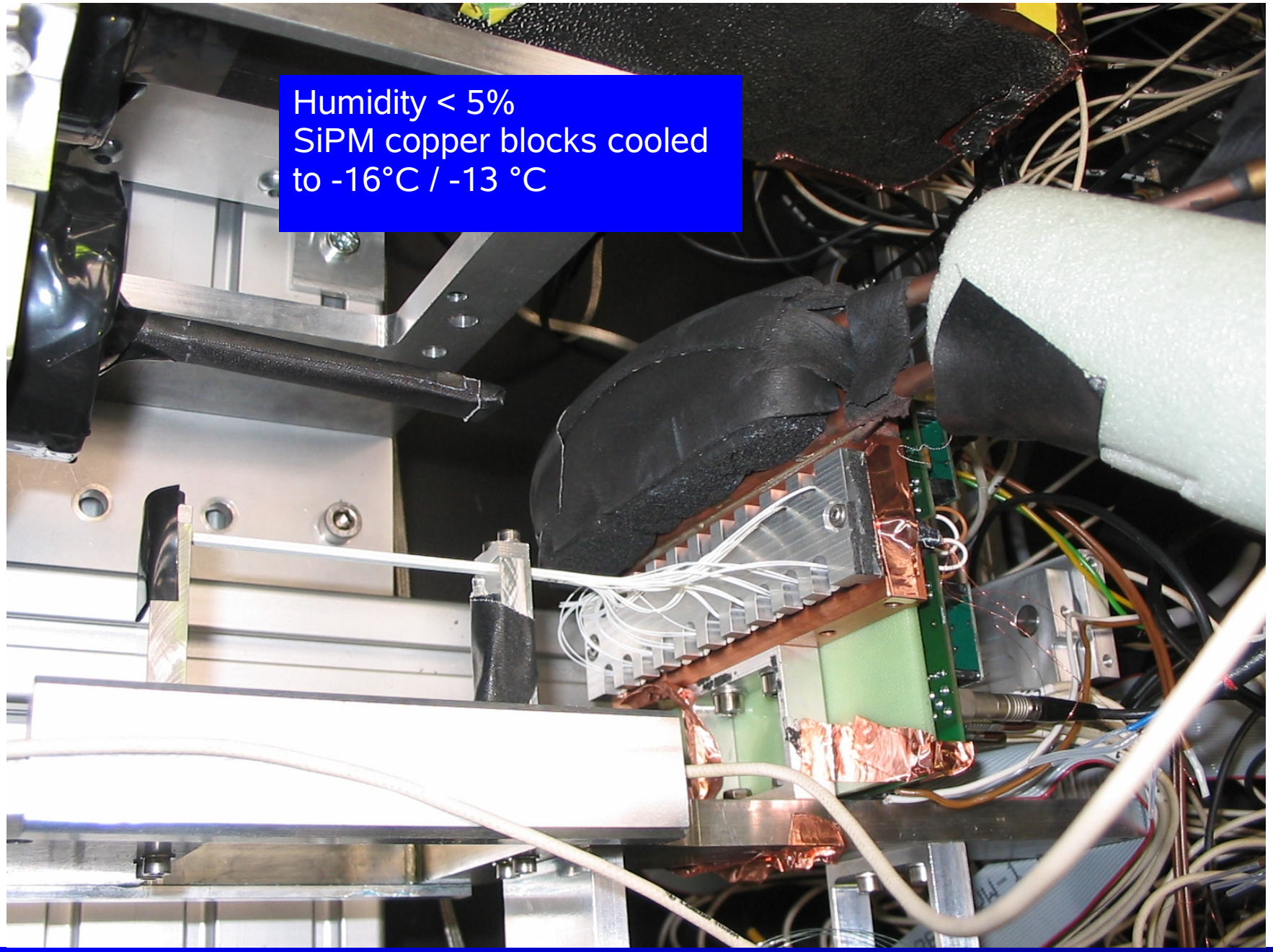
I. Physikalisches Institut B, RWTH Aachen, 2 November 2007

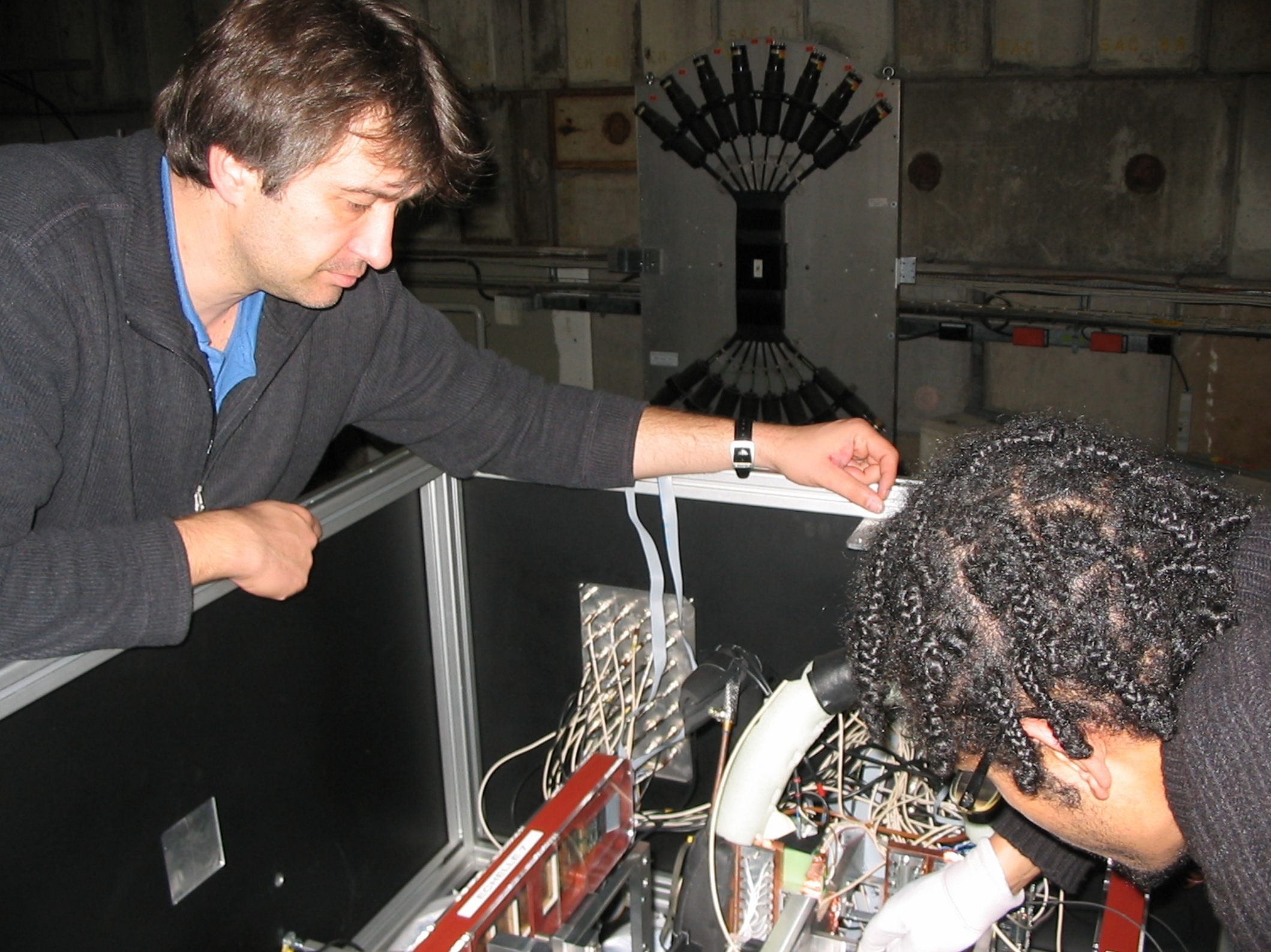

32x5 round fibers, d=250μm, no EMA
2x3x10 square fibers, d=300μm
AMS Tracker ladder
finger trigger
finger trigger
AMS Tracker ladder
ECHELLE 7
ECHELLE 7

32-fiber module



Last year's fiber bunches

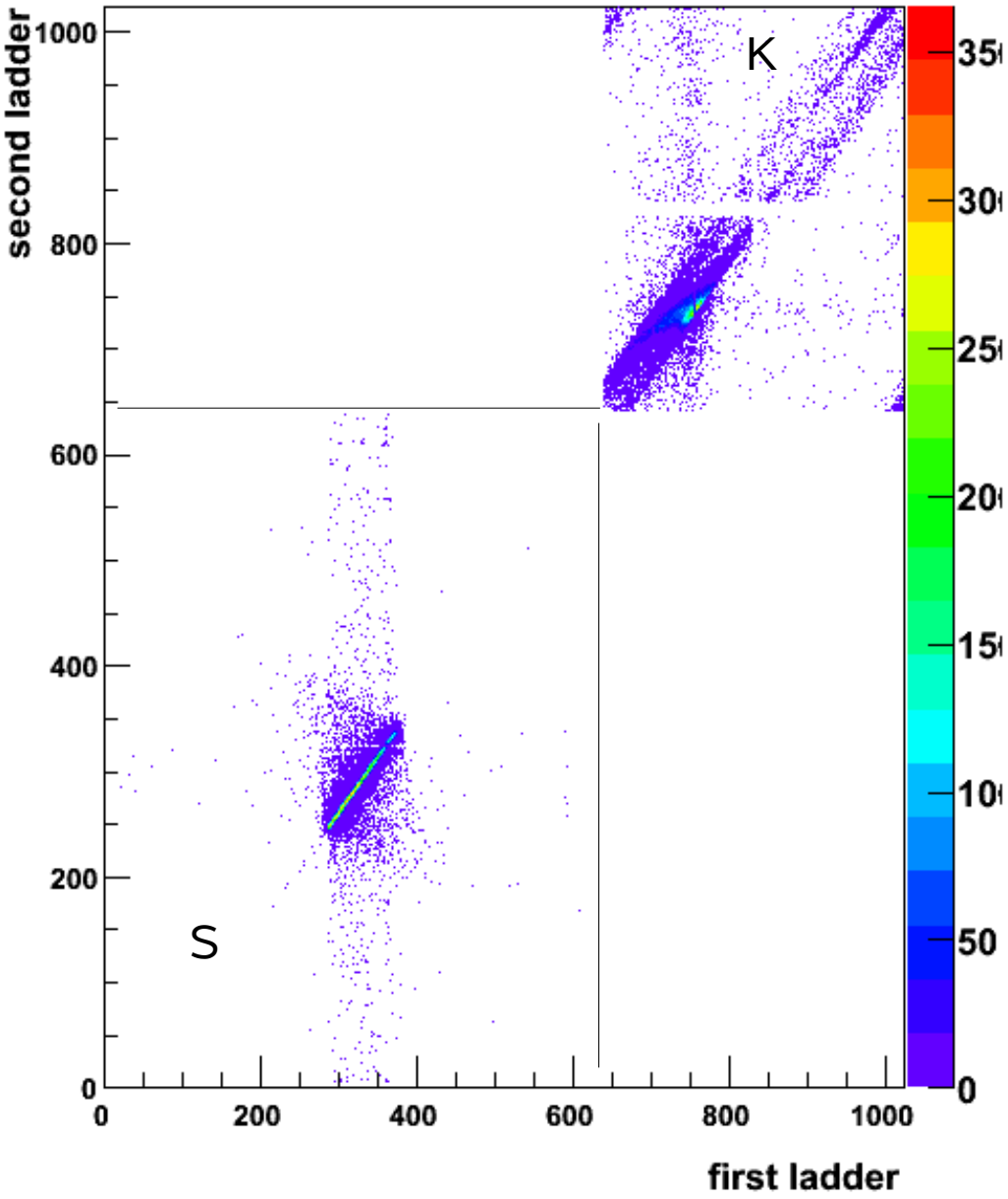


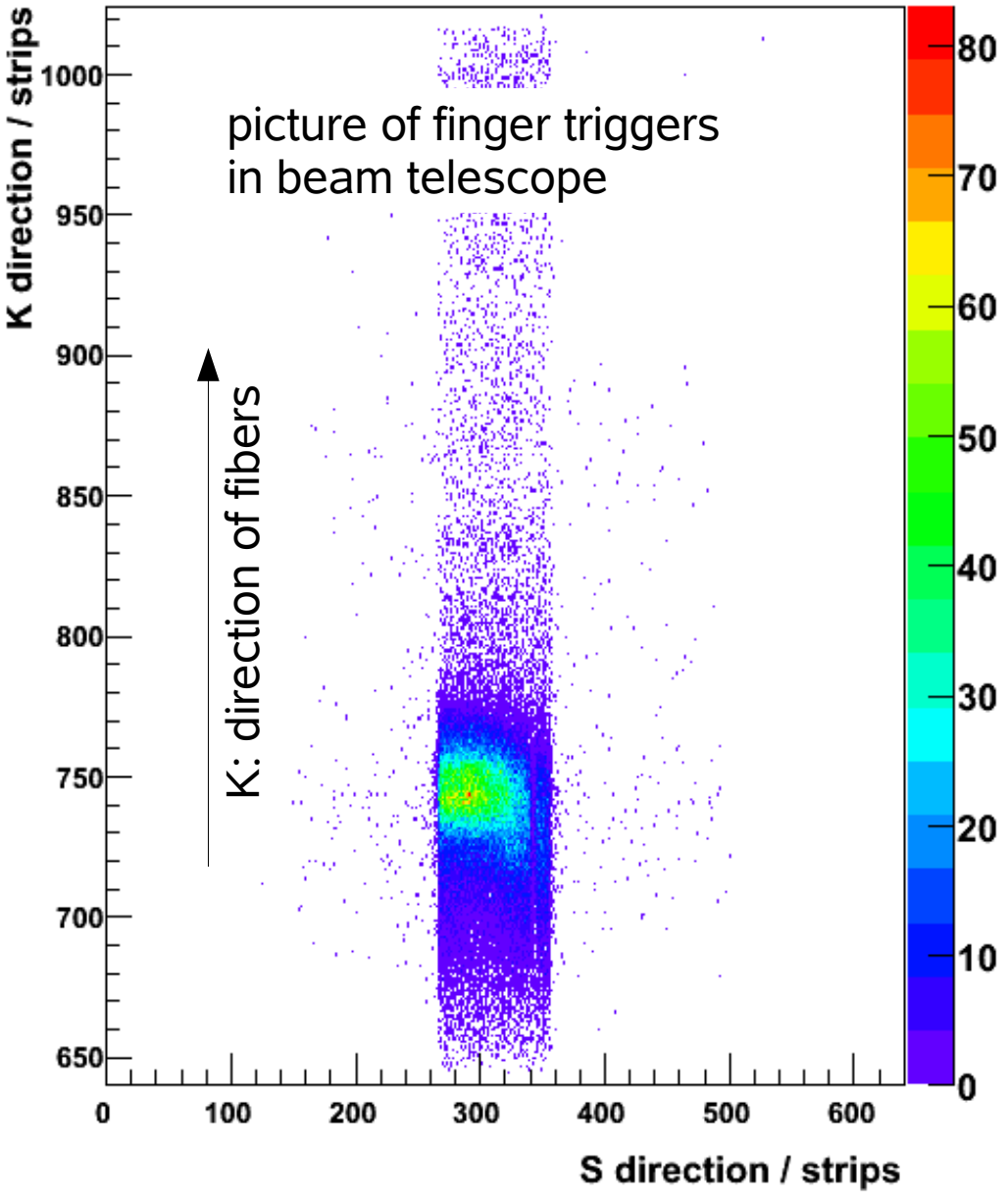



Old School
NY Lions

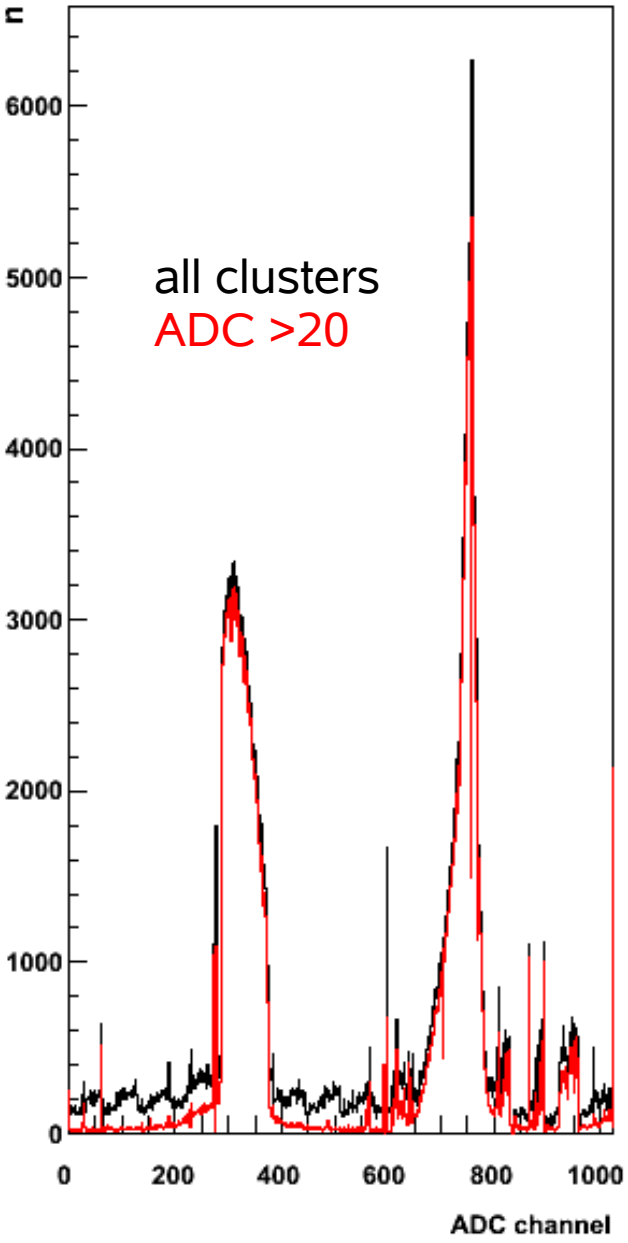

FREEMAN
RWTH
Physics AC - IB

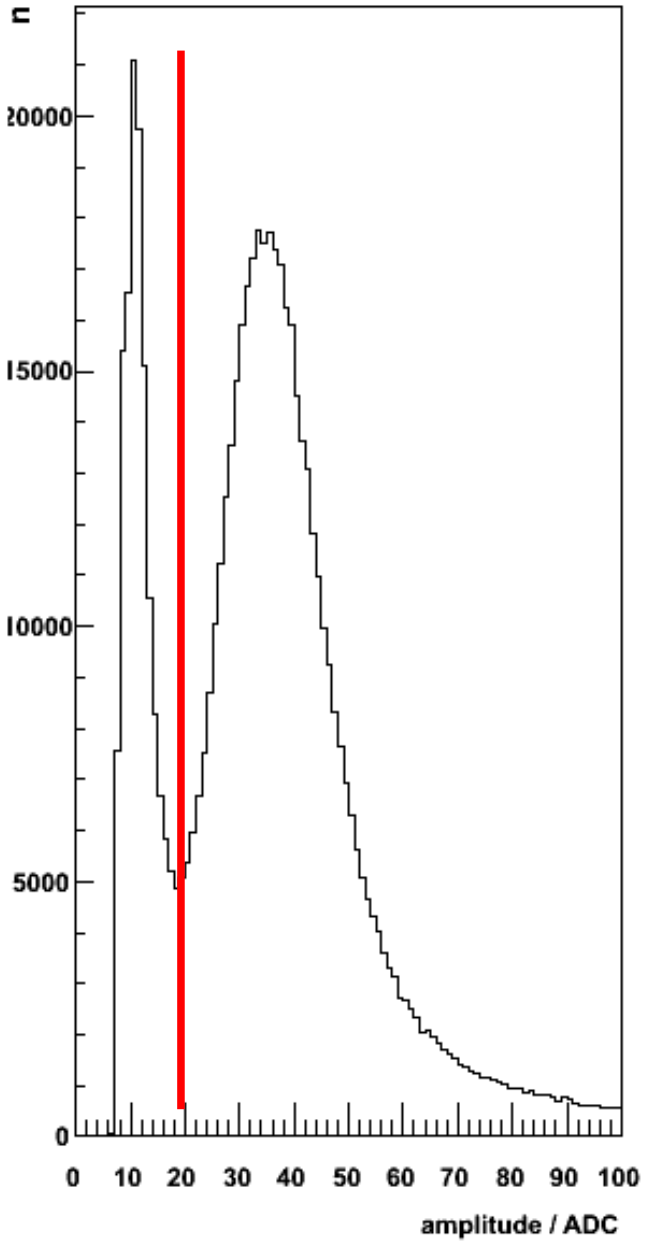
Beam telescope and beam spot

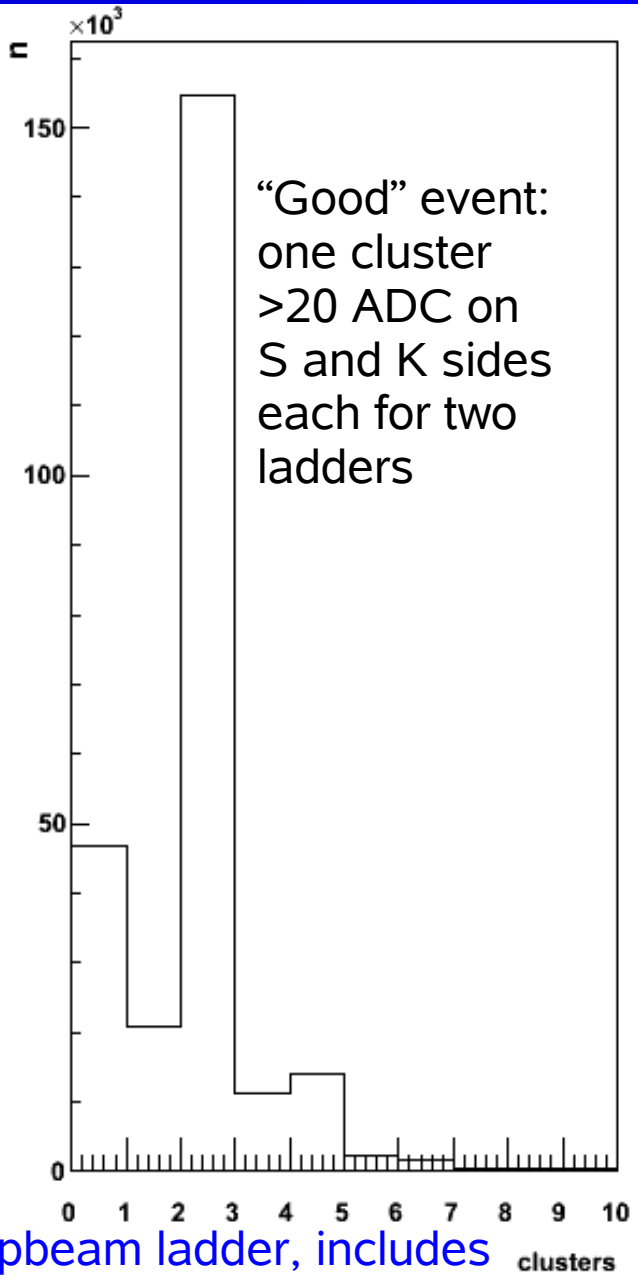




Beam telescope statistics



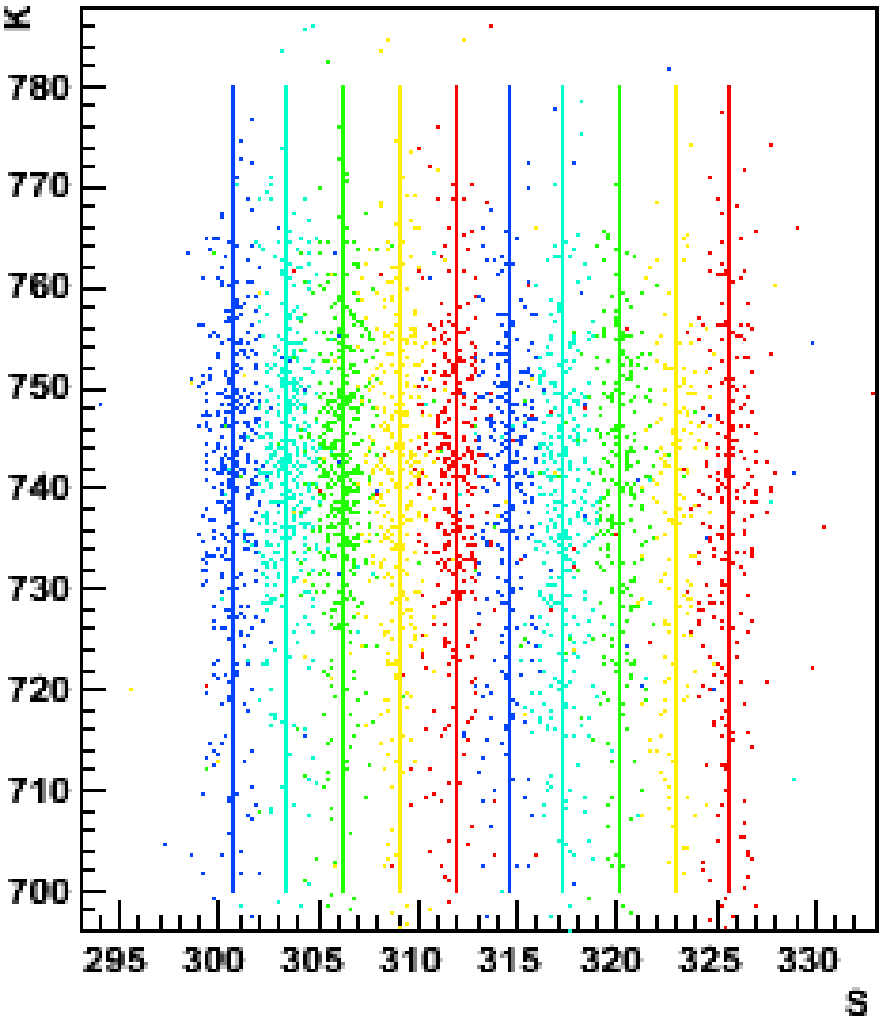




upbeam ladder, includes random trigger events

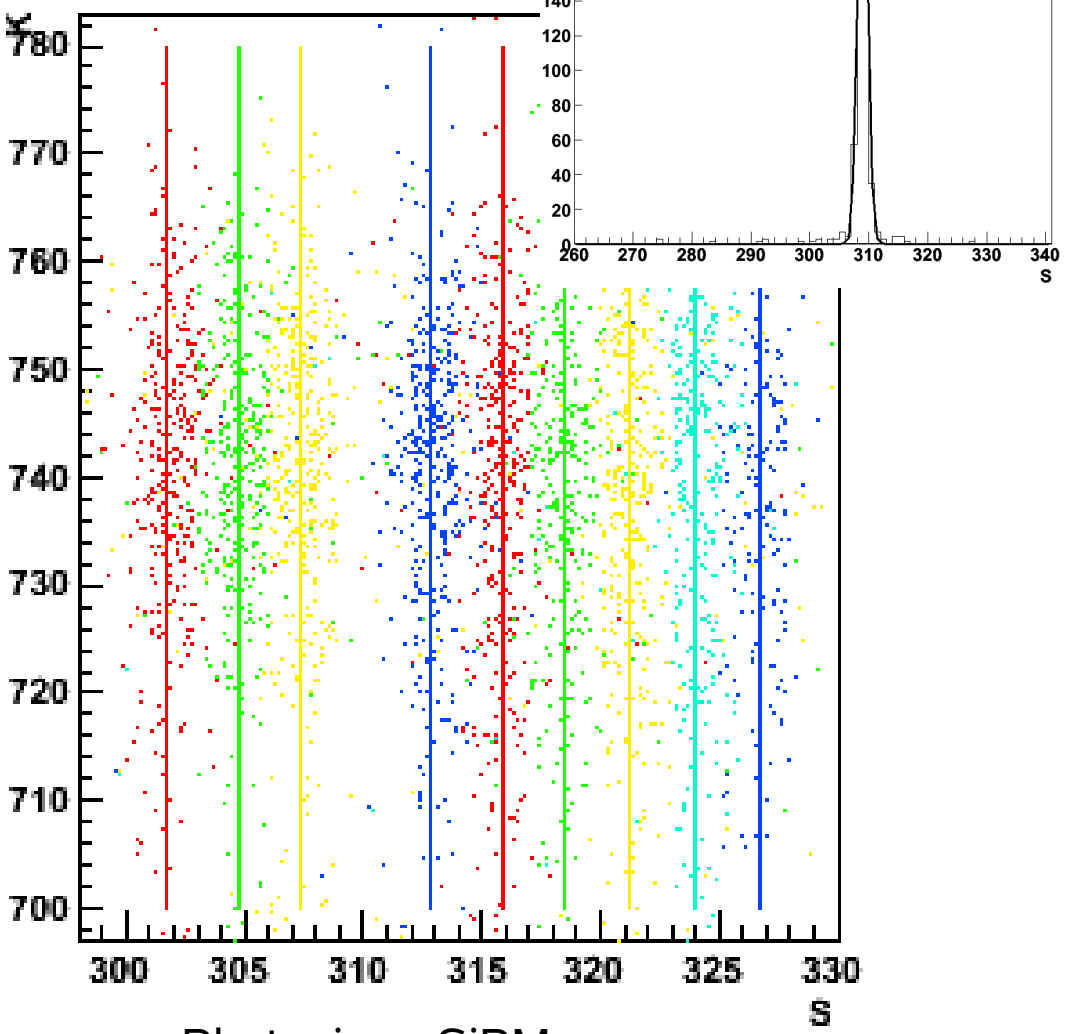
Old fiber bunches in beam telescope

Position in beam telescope for SiPM with > 2 photo electrons



Hamamatsu SiPMs

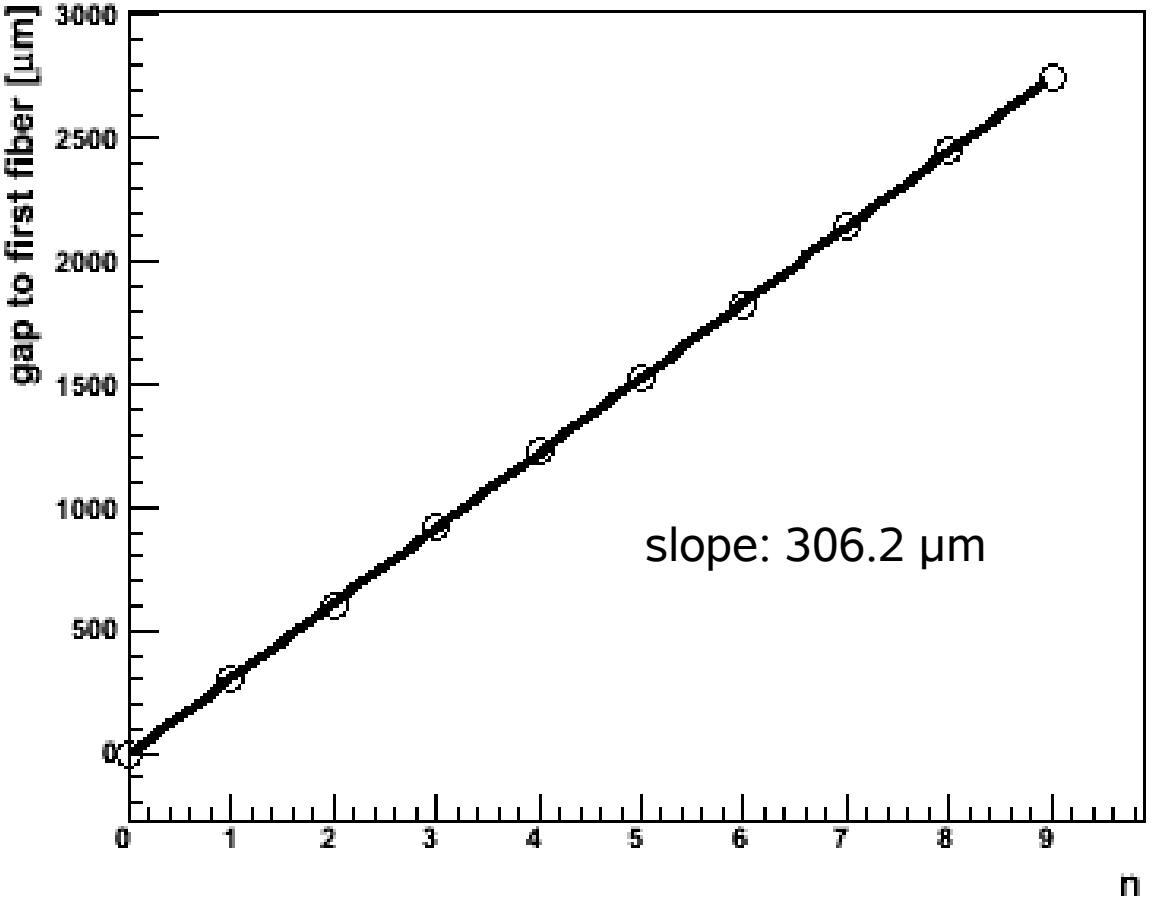
Determine positions of fibers from data

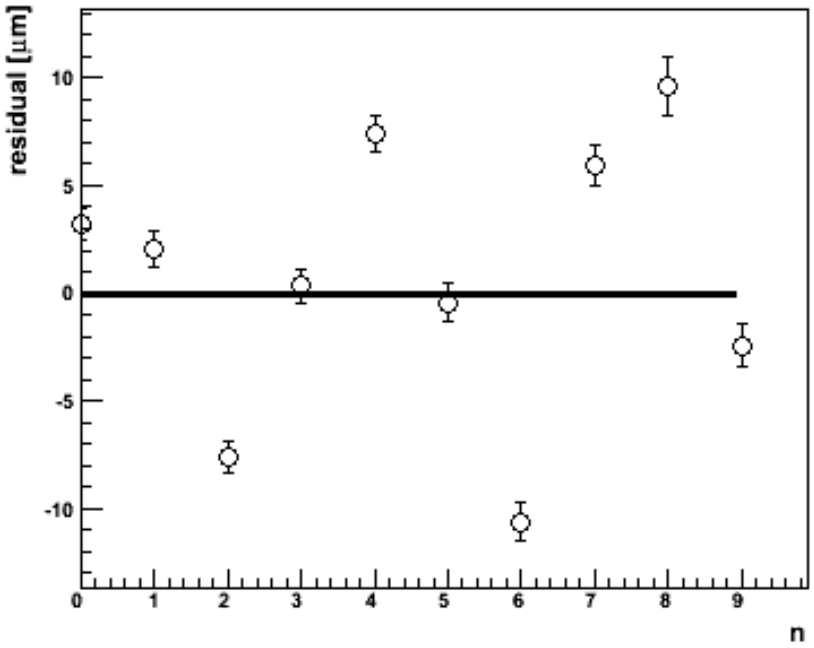


Photonique SiPMs

Fiber spacing in old bunches

nominal fiber pitch: 300 µm plus glue

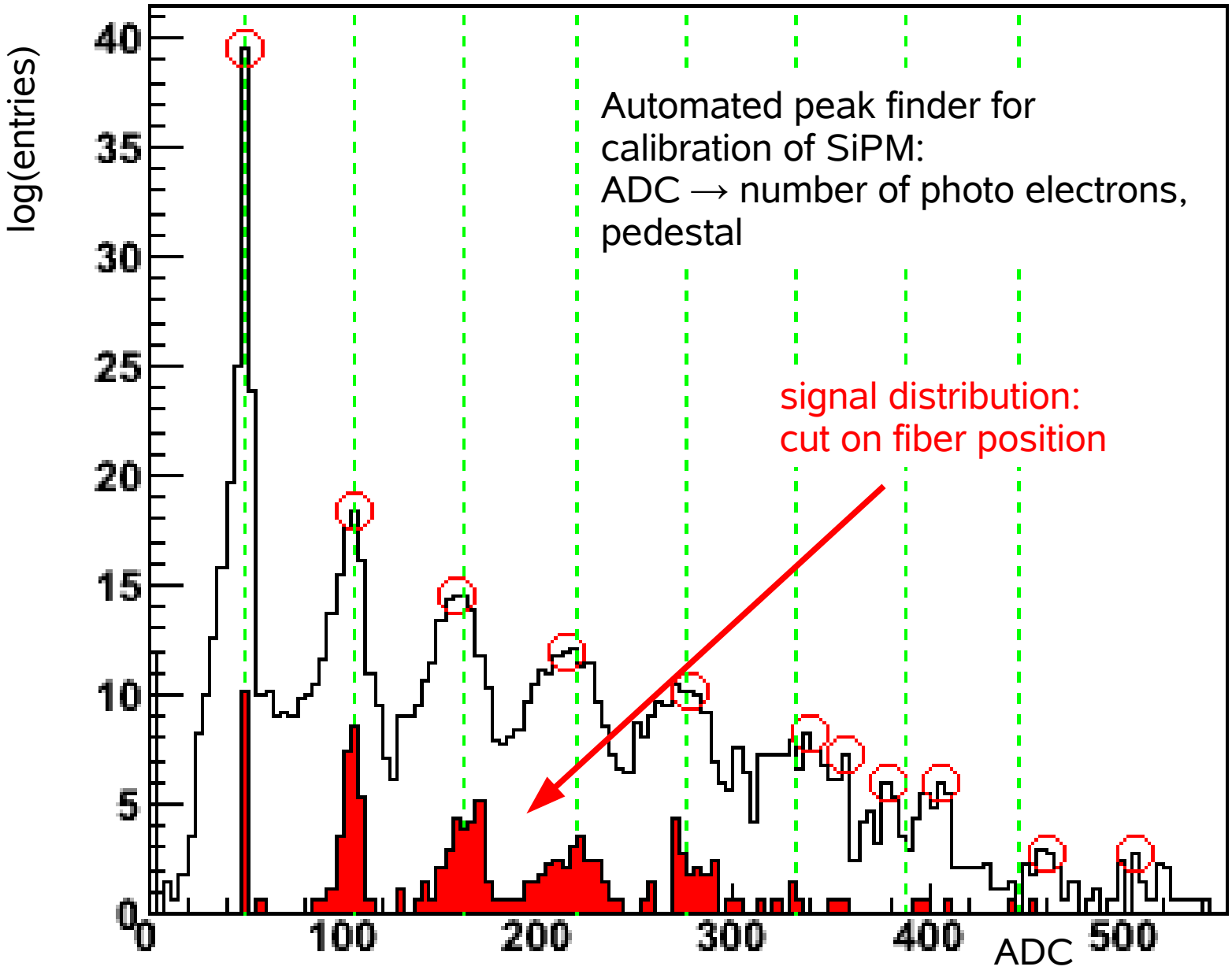




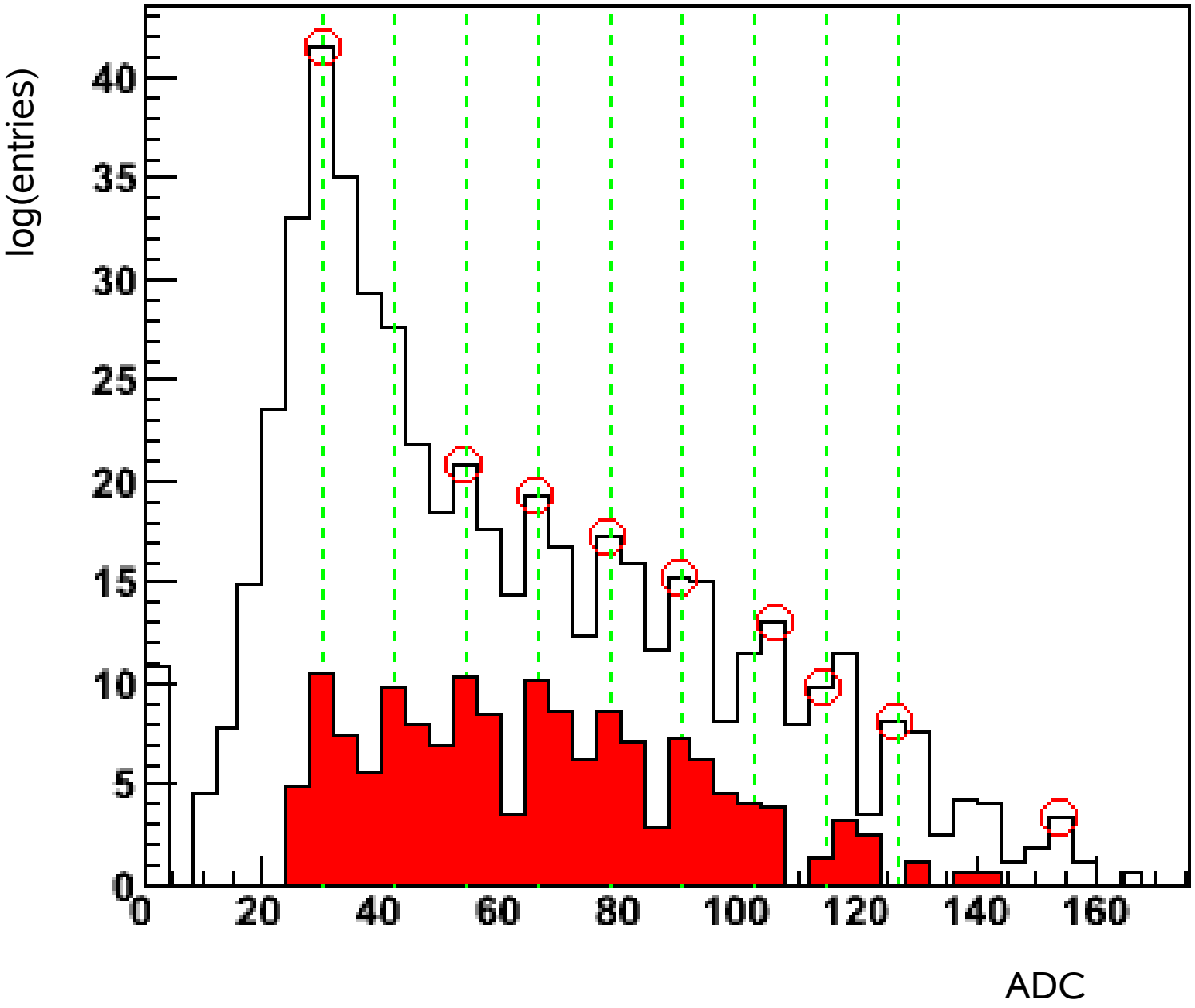
residual plot

second bunch: 303.9 µm

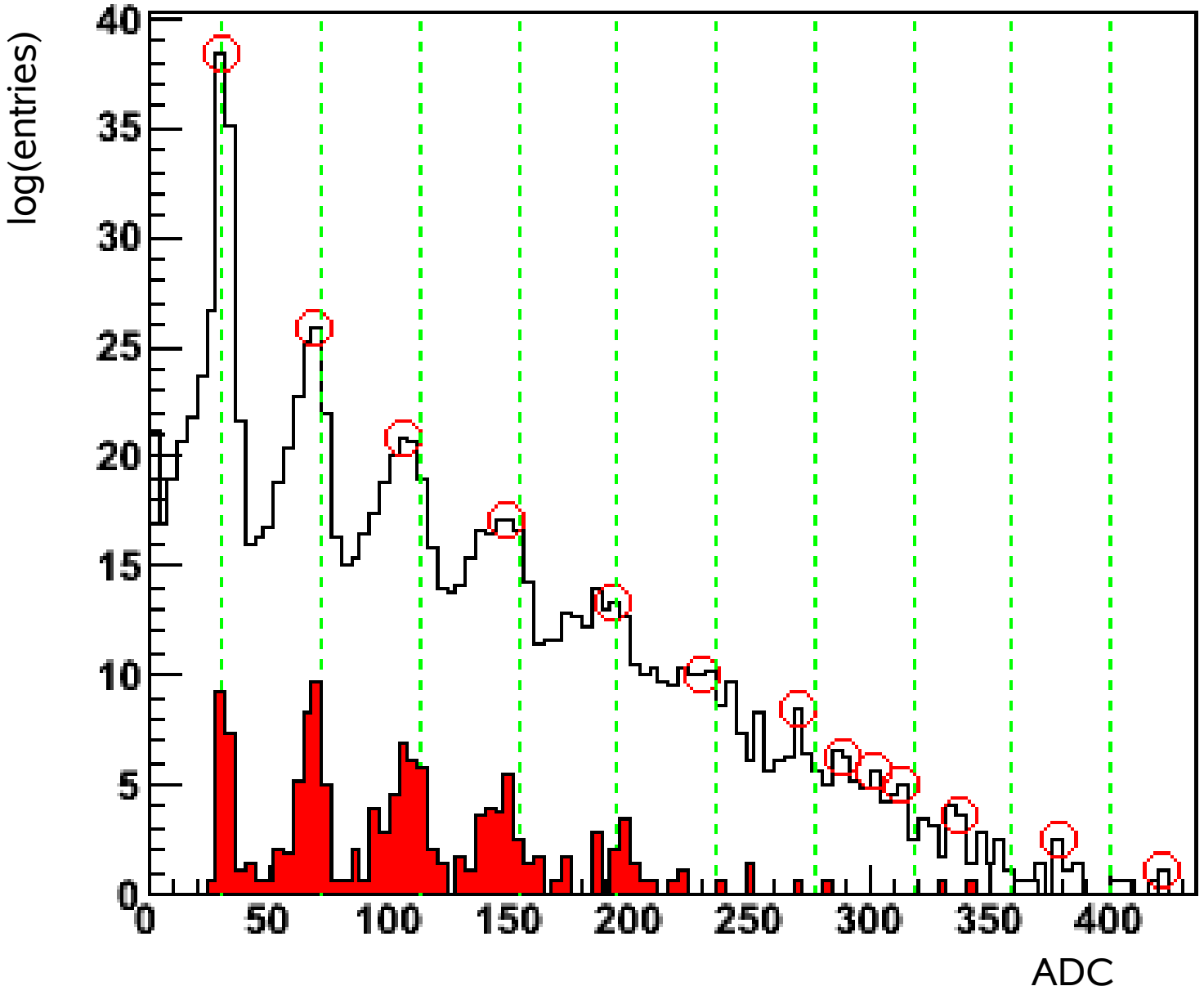
Example of a Hamamatsu SiPM in old fiber bunch



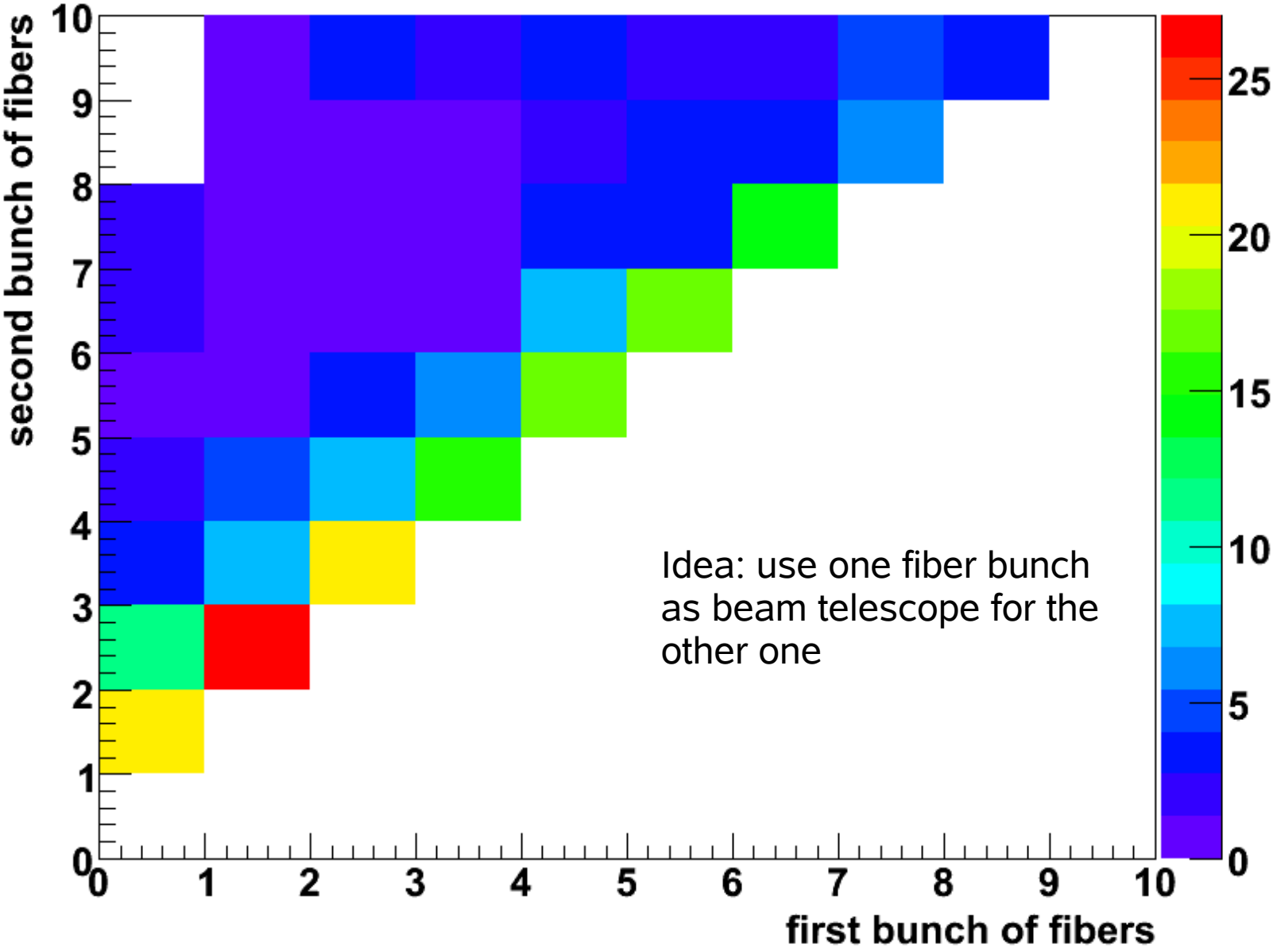
Example of a Photonique SiPM in old fiber bunch



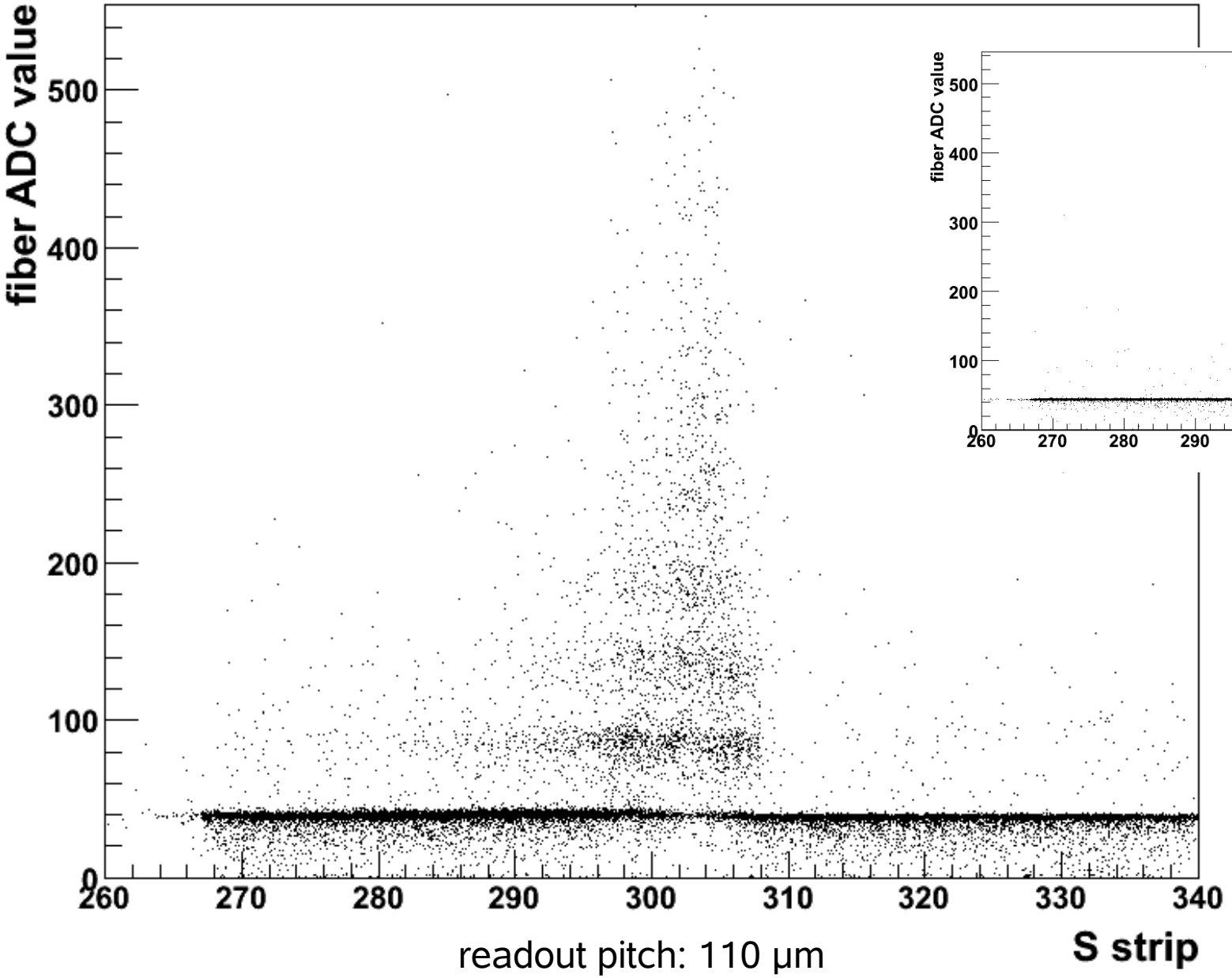
Example of a Hamamatsu SiPM in 32-fiber module



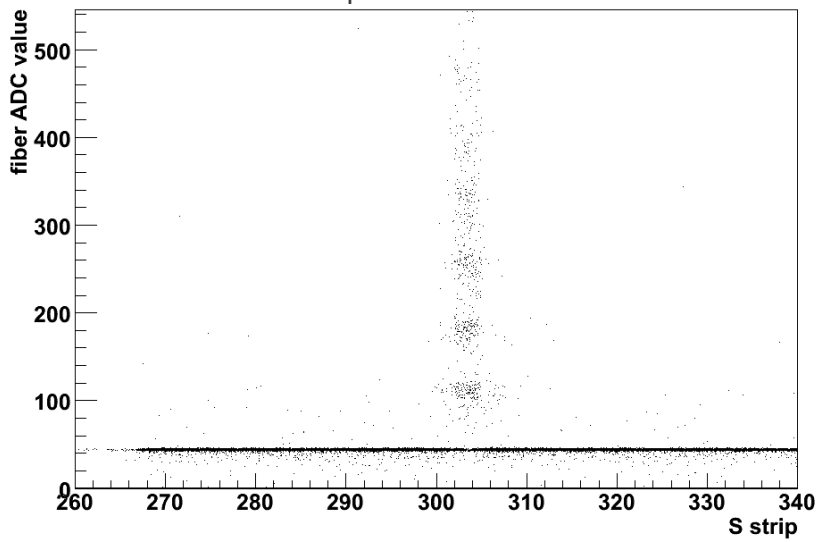
Correlations between the two old fiber bunches



Crosstalk in 32-fiber module ?



readout pitch: 110 µm



for comparison:
old fiber bunch

Conclusions and outlook

- Overall readout rate almost an order of magnitude lower than last year:
  more ADCs in CAMAC, fewer spills, more beam-down time.
- Problems combining AMS and CAMAC readouts.
- Analysis ongoing, especially of 32-fiber module replacement.
- Results seem to indicate diminished performance of bunch of square fibers compared to last year.
- Performance of 32-fiber module(s) leaves to be desired.