

# Further development of the QCLAM and Lintott spectrometers \*



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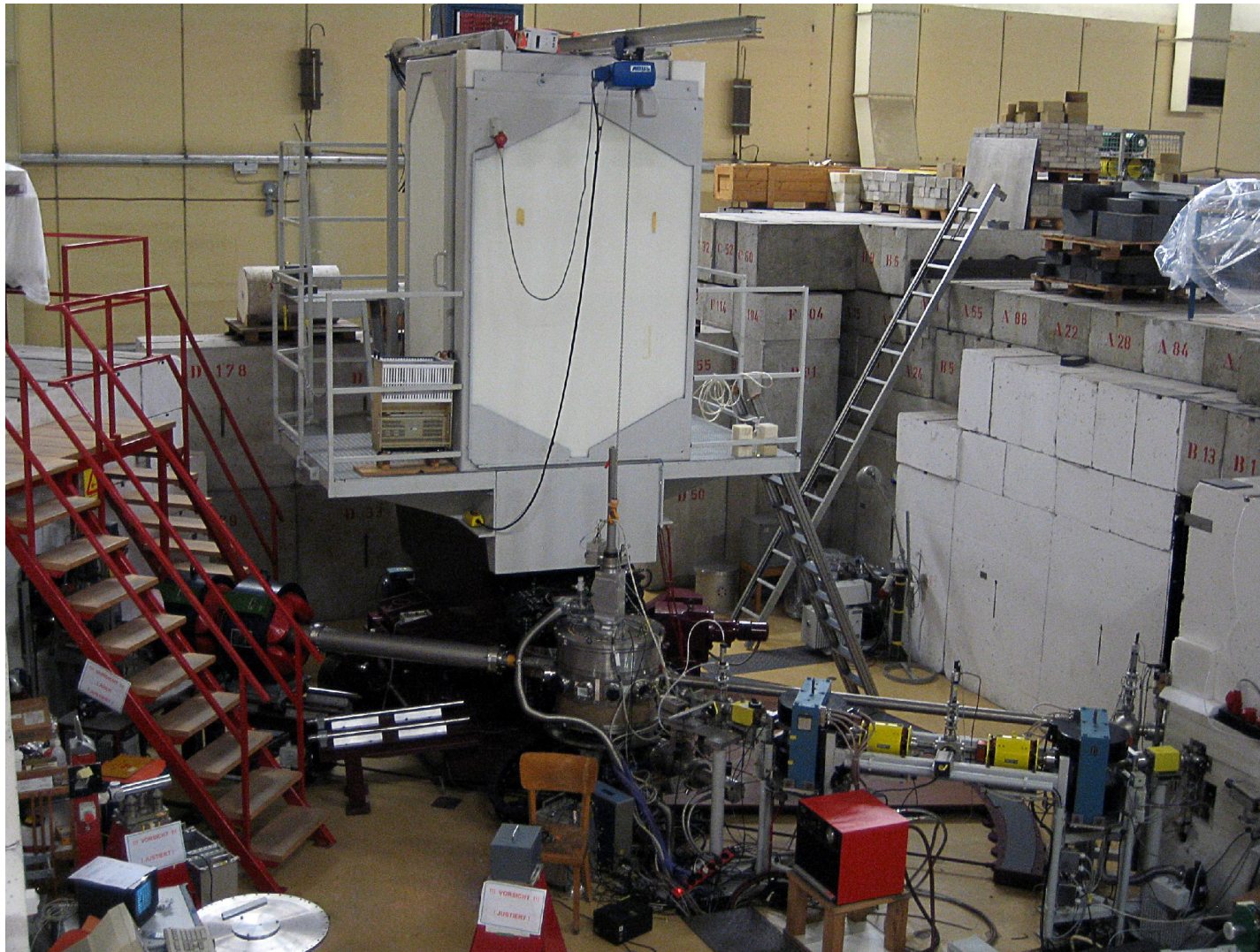
- Present detector and data acquisition systems
- New system at QCLAM spectrometer
- Status and outlook

SFB 634

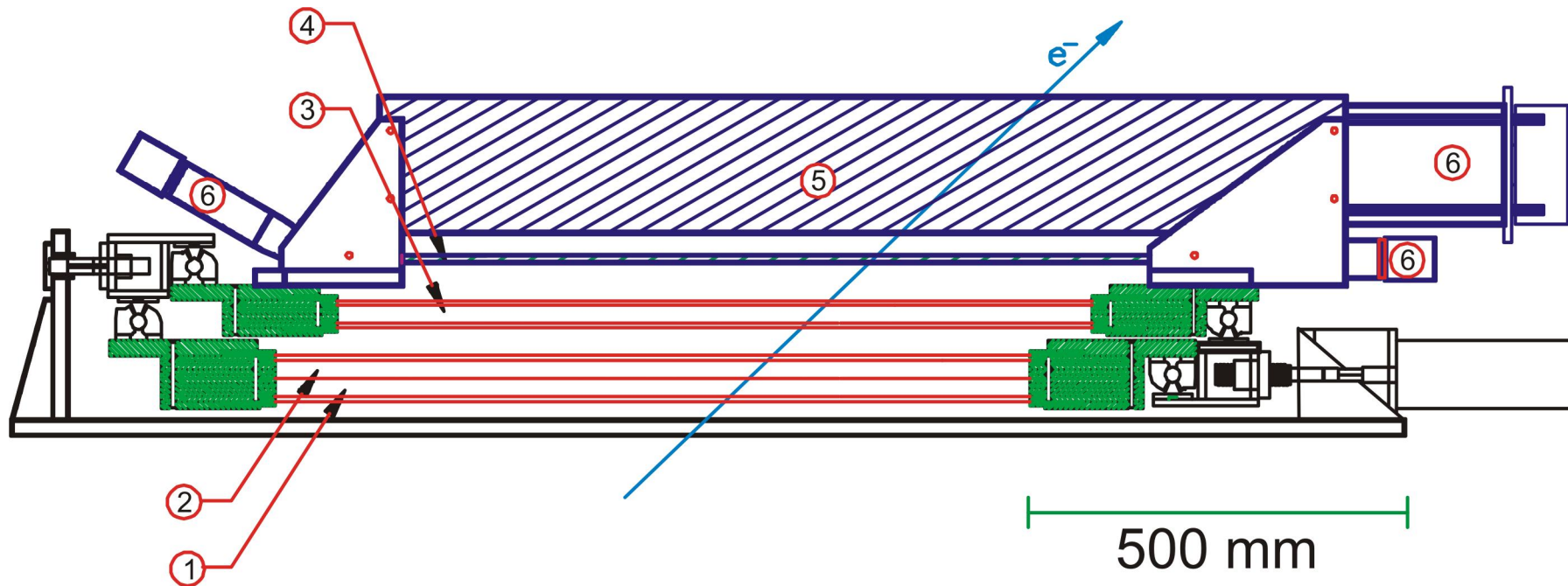


\* Supported by the DFG within SFB 634

# QCLAM spectrometer



# Detector System at the QCLAM Spectrometer



① VDC X1

② VDC U

③ VDC X2

④ Scintillator

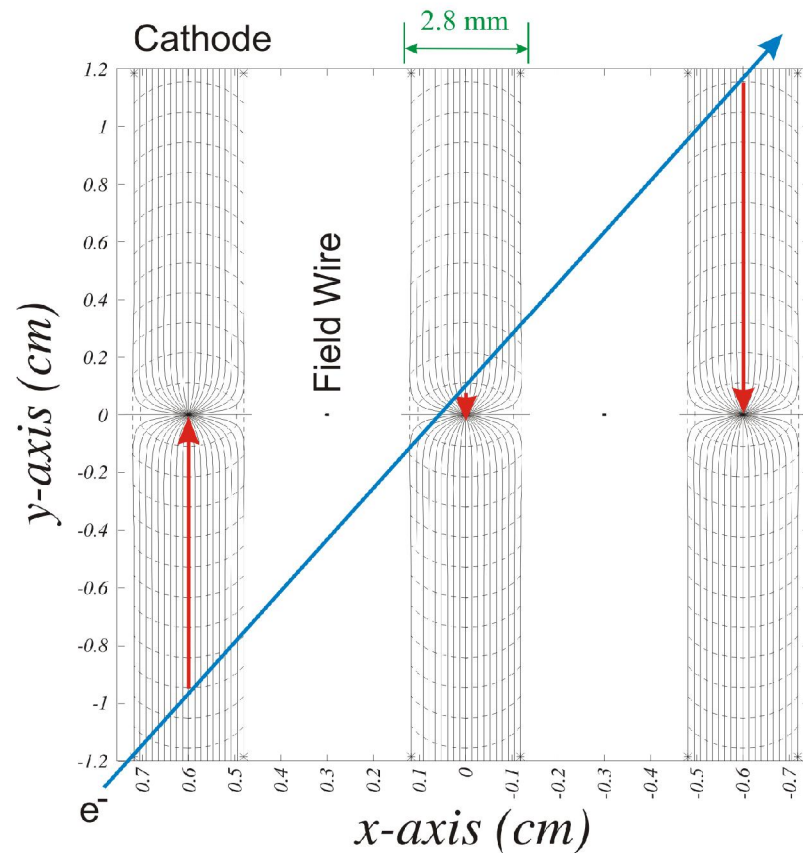
⑤ Cherenkov detector

⑥ Photomultiplier

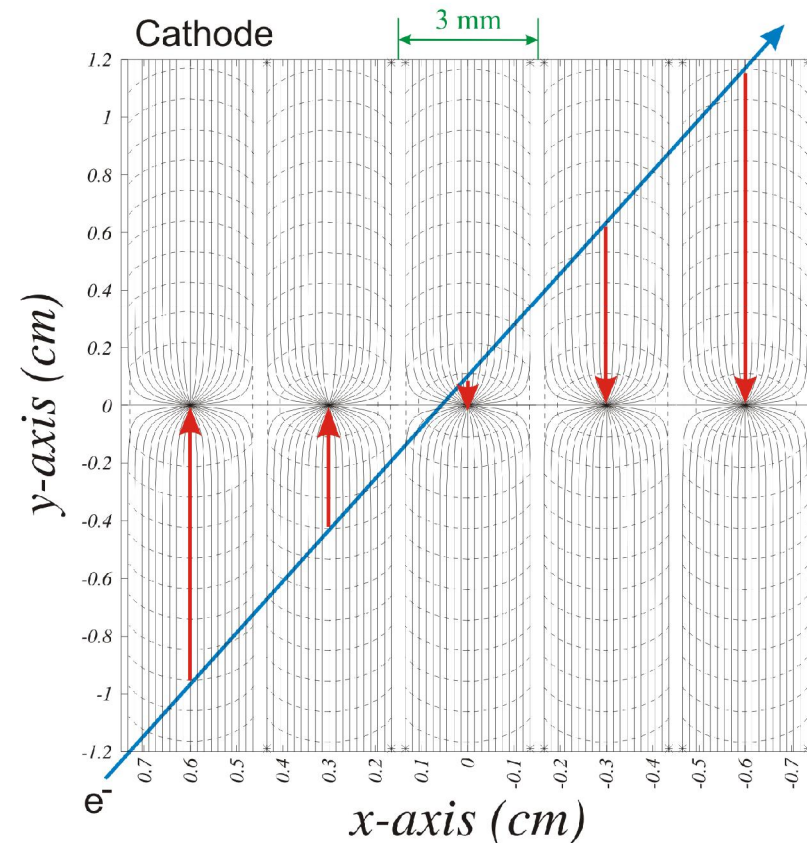


# New MWDC

OLD VDC



NEW VDC



- More precise event reconstruction
- Higher efficiency for events with large intersection angle

# Present data acquisition system (DAQ)

- Four independent stages in signal processing
  - preamplifier
  - discriminator
  - TDC
  - readout electronics
- Each 9th wire connected to the same TDC channel
  - Hit pattern signal needed for wire identification
- Readout of TDC values and hit pattern by MICROS
  - controlled through VAX/VMS software
  - VAX/AXP/VMS cluster does not exist anymore
  - solution: VAX/VMS emulator under Linux

# Why new DAQ?

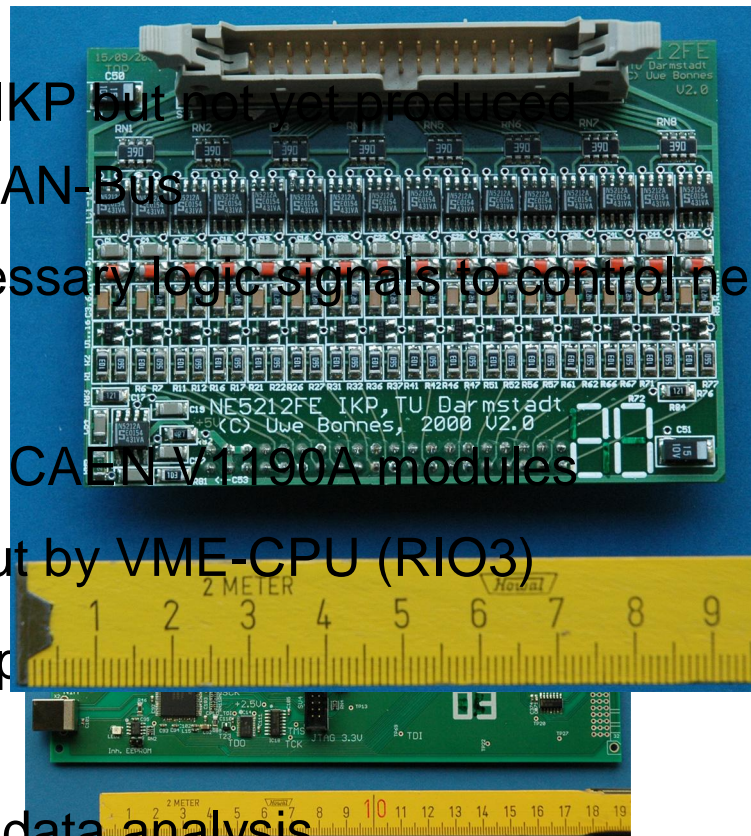
- New MWDCs require new electronics
- “Black boxes”: no documentation for some components
- Obsolete electronic components (more than 15 years old)
- Control through outdated VAX/VMS software

# Requirements on new DAQ

- Based on standardized components and interfaces
- High number of channels (832) for new MWDCs requires a large scale integration of hardware modules
- Control software based on standard platform (Linux, Windows)

# Concept and status of new DAQ

- Single preamplifier, discriminator and TDC for each wire
- New preamplifiers designed and produced in IKP
- Discriminators
  - designed in IKP but not yet produced
  - control via CAN-Bus
  - provide necessary logic signals to control new DAQ
- TDC
  - 128 channel CAEN V1190A modules
  - direct readout by VME-CPU (RIO3)
- Software development
  - TDC
  - readout and data analysis





- Computer system updated + internal network for QCLAM/Lintott
- AXP/VAX/VMS emulators to control present DAQ and to use some old software (PhaShi, FIT)
- Si microstrip detector system works well
- Backup detectors available
- Improvement of ion optics for dispersion matching
  - Diploma thesis of Tobias Weilbach

