Development of a System for Characterisation for a new DEPFET Device

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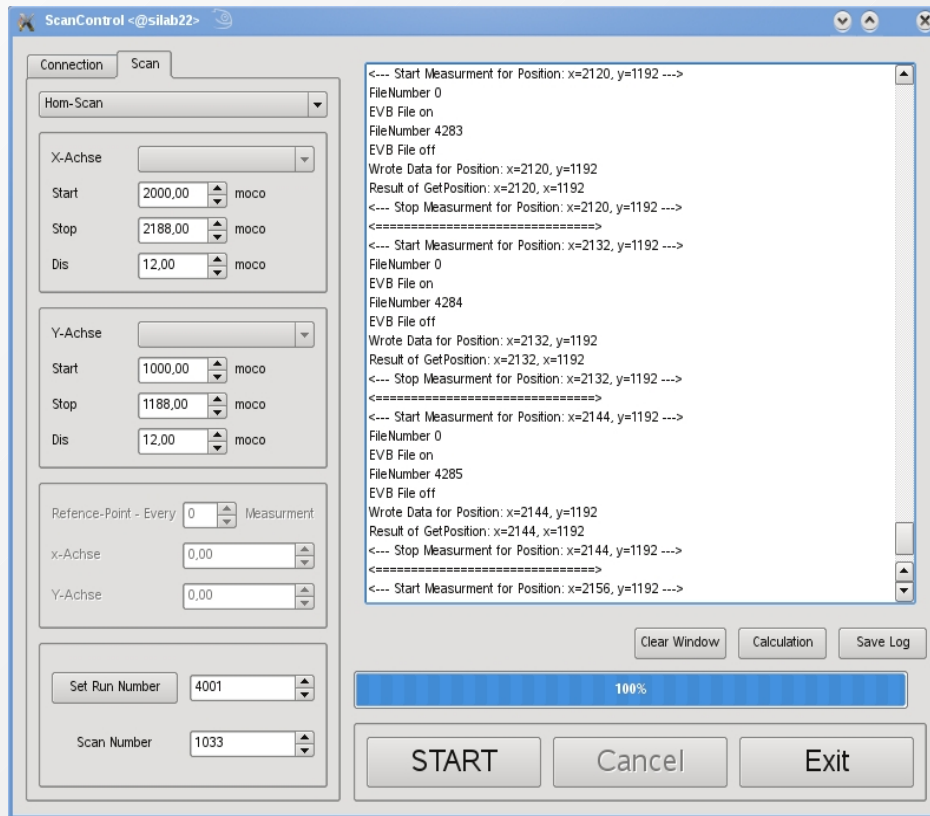universität**bonn**

Motivation

- Repeated characterisation of DEPFET devices requires a system for automatic control and data processing :
  - Voltage control for parameter optimisation (mainly Clear_Low/High, CCG) with ^{241}Am-source.
  - Position control for laser measurements, homogeneity scan of whole matrix (gain variations)
  - DAQ control for synchronous data taking

Parameter-Scan
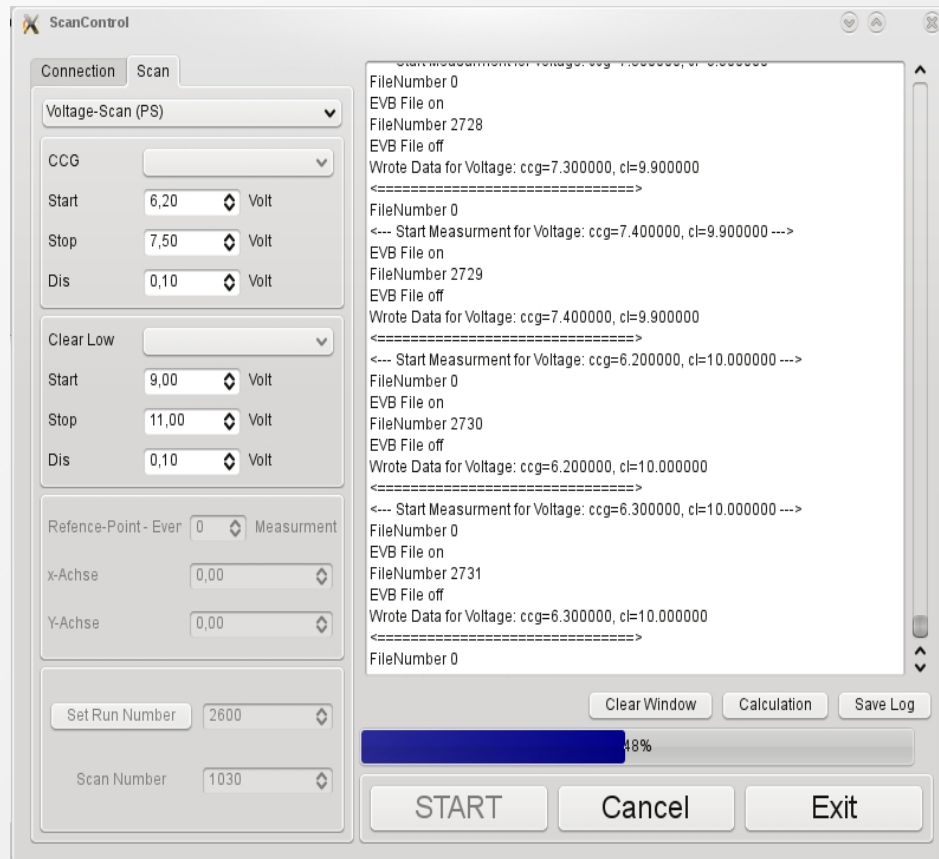
Voltage-Scan:
Clear_Low and CCG
4V range
at a precision of 0.25 V
    ~ 256 Runs needed
at a precision of 0.1 V
    more than 1000 Runs
    needed

Homogeneity-Scan

- Area-Scan:
  at a precision of 72 μm a scan of whole matrix would need ~ 2000 Runs (~1500 Events/Run)

Communication with System

DAQ

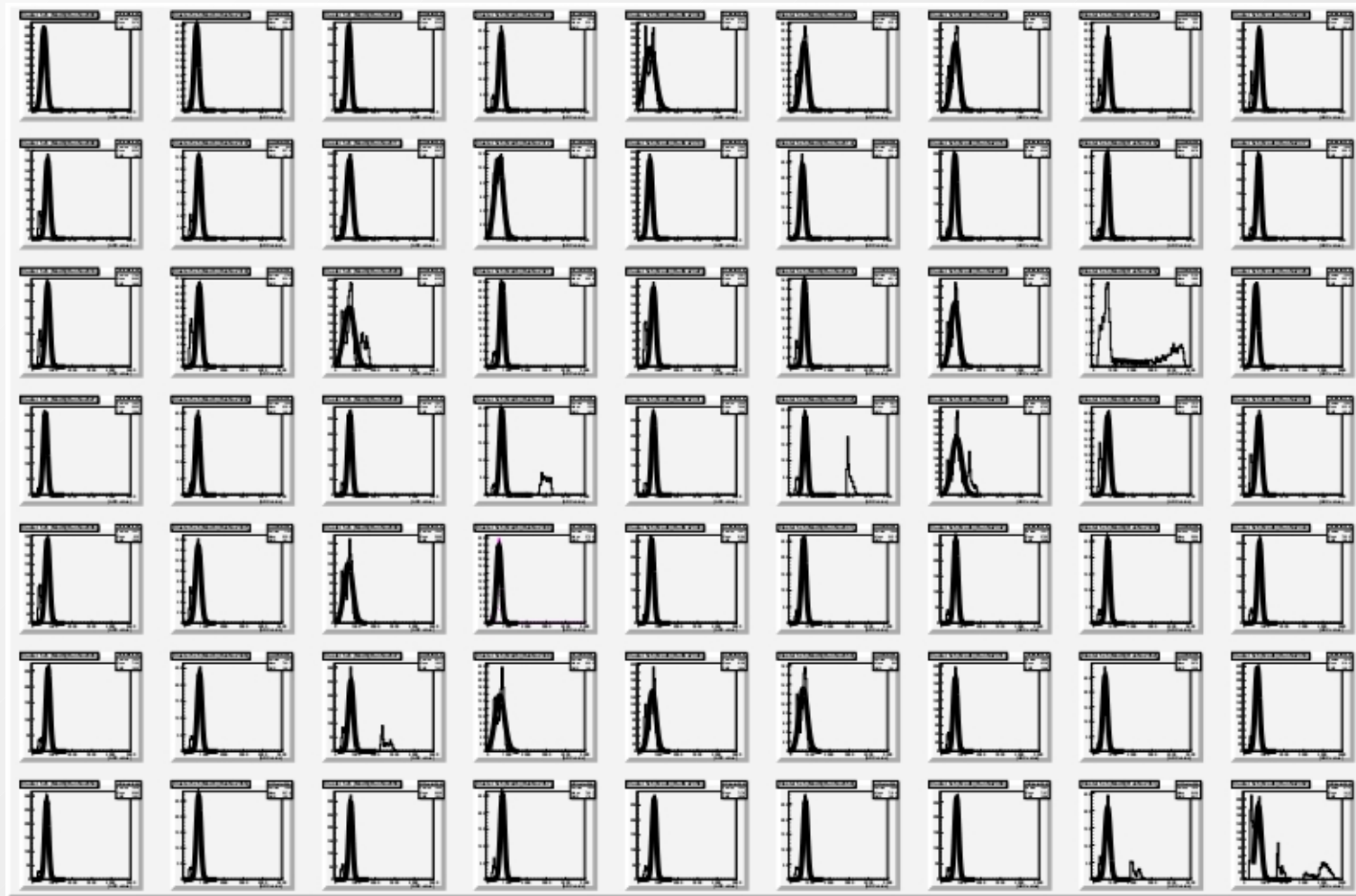**DPS/Lab Supply**
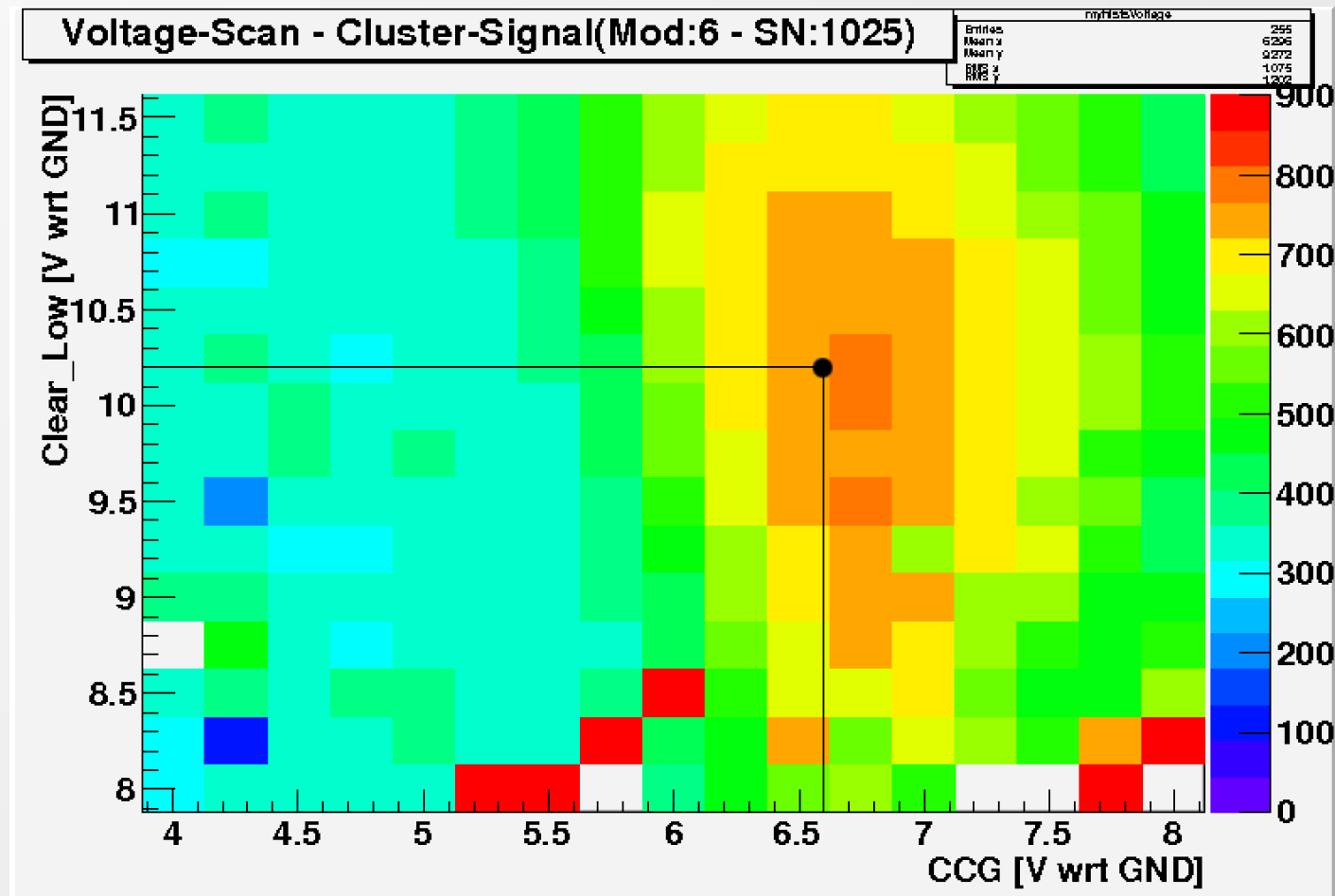
Motor-Table

TCP

TCP

Com-Port

Setup for parameter-Scans

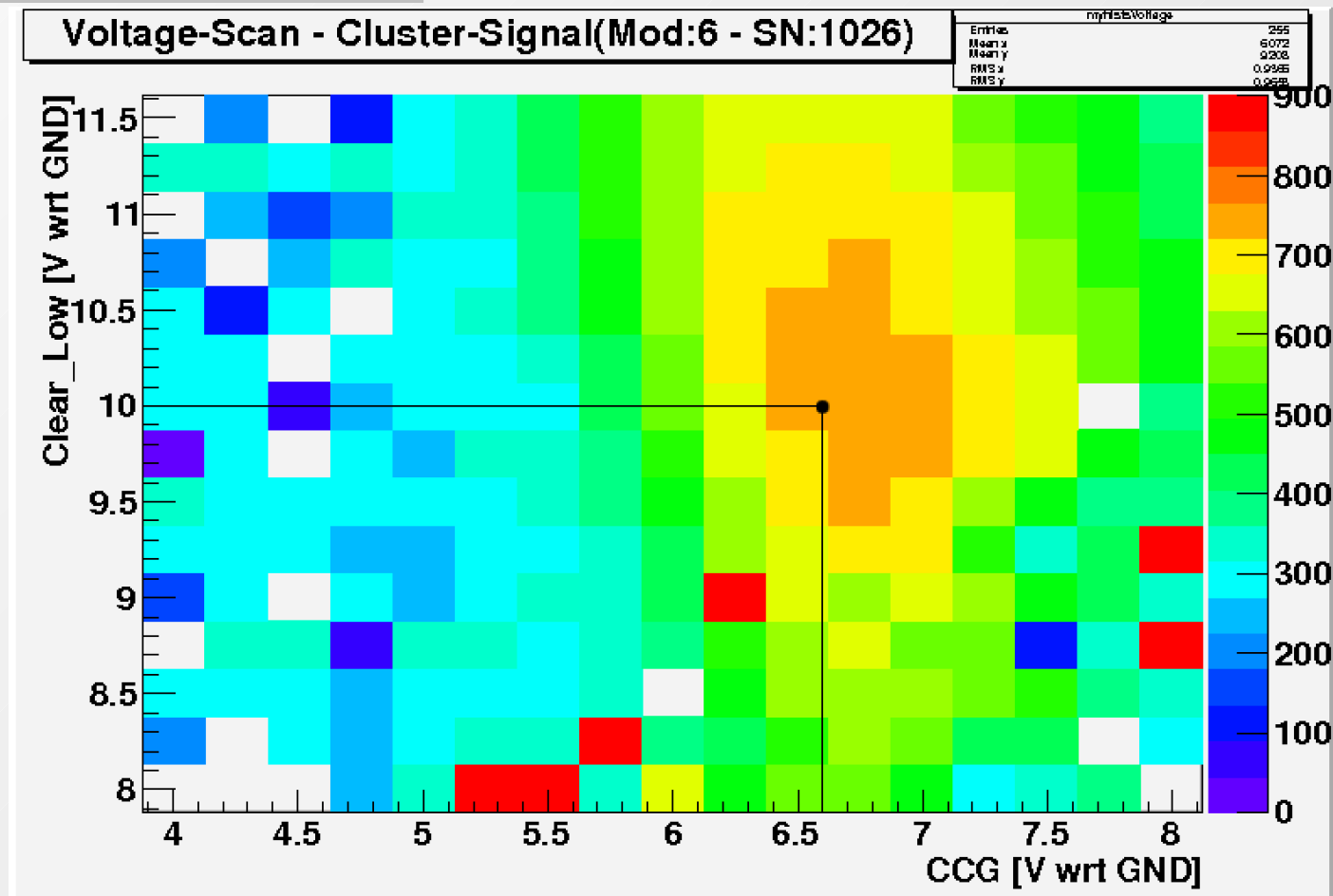## Sample of histograms for voltage-scan (^{241}Am)

H 3.0.12 (COCG L B) - Telescope Module Parameter-Scan
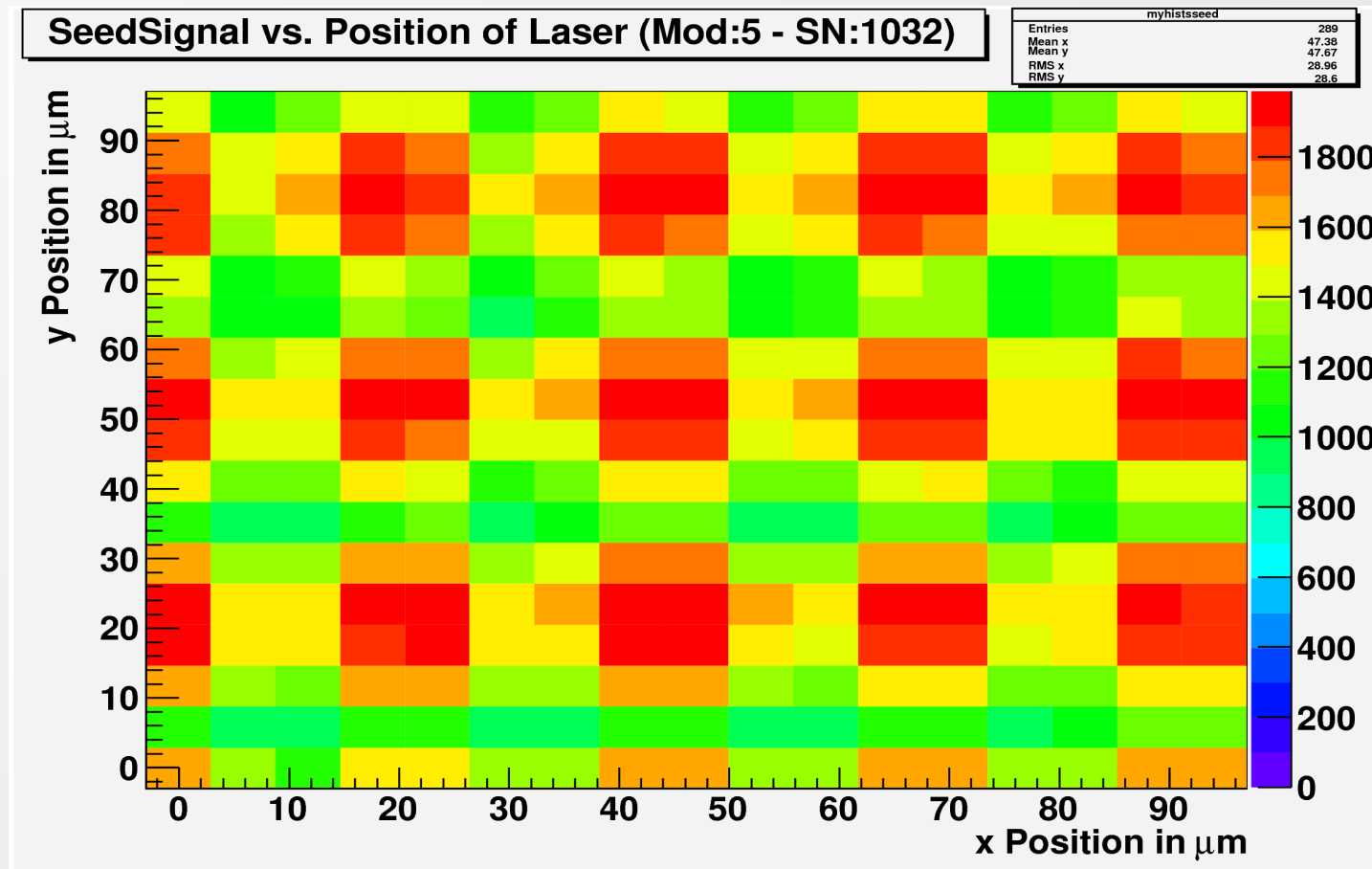

black point: Characterisation results from munich

H 3.0.11 (COCG L B) - Telescope Module Parameter-Scan

black point: Characterisation results from munich

H 3.0.12 (COCG L B) - Telescope Module Homogeneity-Scan

(Pixelsize: 24μm x 32μm)

Summary

- fast and automatic scans of parameters and homogeneity of the DEPFET matrices are possible now
- within 3 hours one can have optimised voltages of a matrix (depending on computer power and precision)