DOM Production and Testing in DESY – Zeuthen

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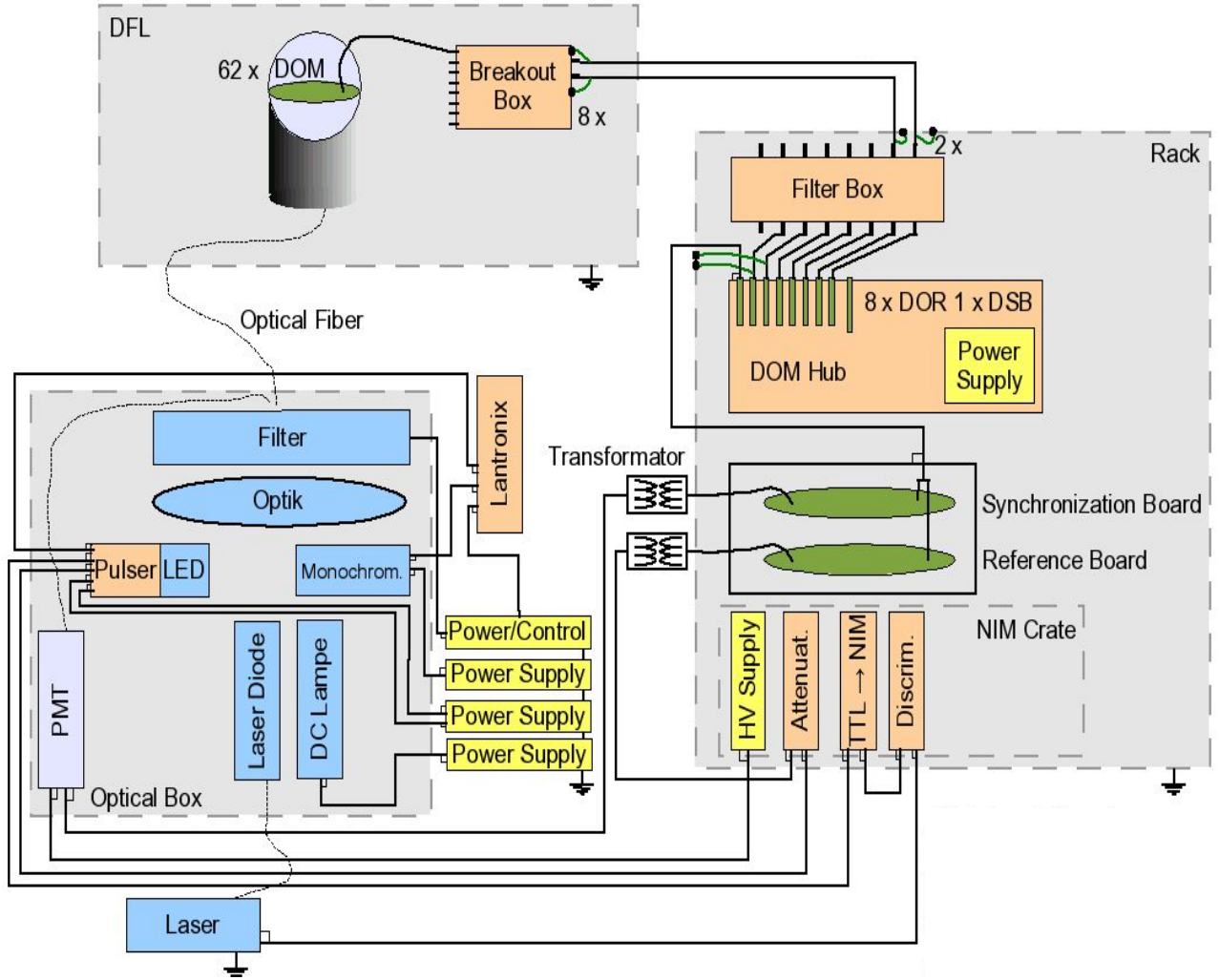
- Setup
- FAT Review
- DFL Optics

Dark Freezer Lab Setup

- DFL capacity: 32 stations (room measures 4 x 6 x 2 m)
- Recently improved cabling and grounding



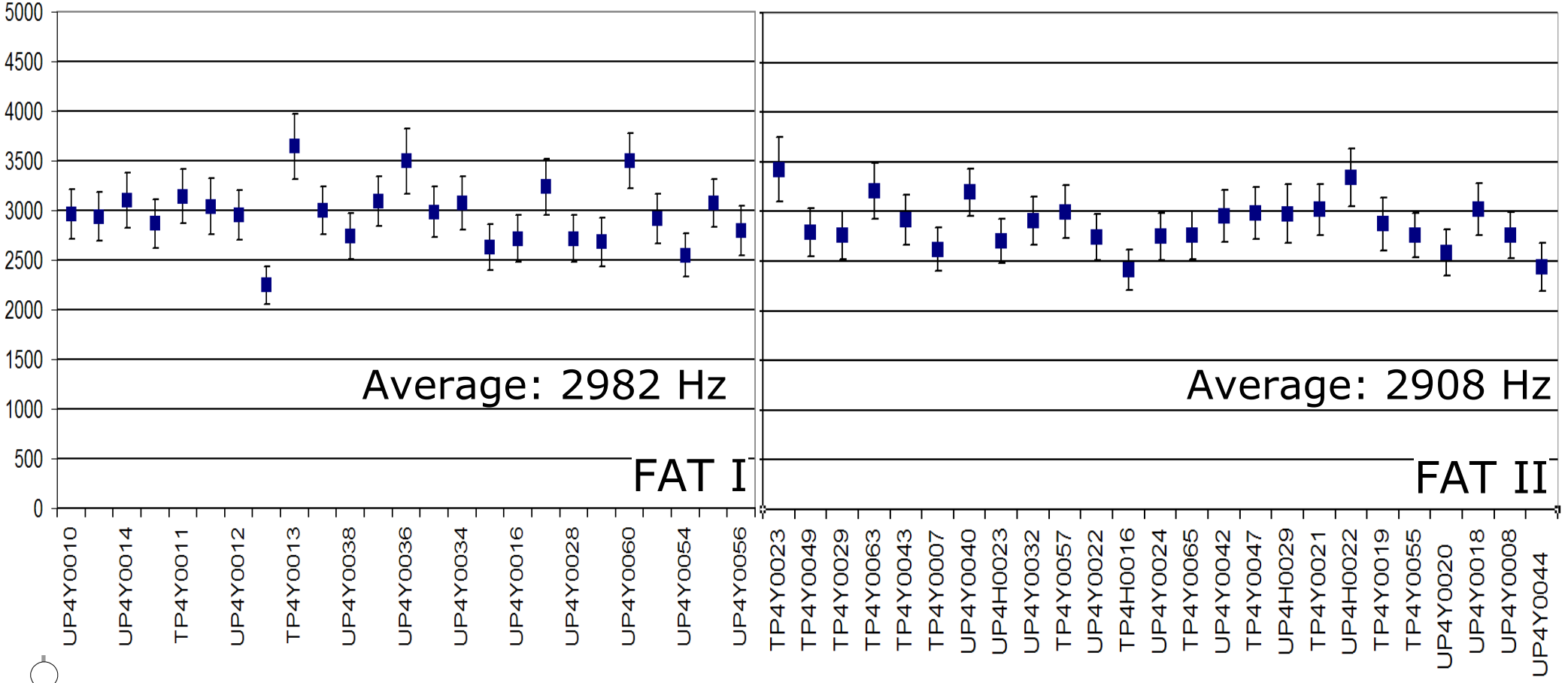
- This year's upgrade:
  - 62 stations
  - 2 DOMHubs (depends on DOR card revision)
- Demands for upgrade
  - GPS receiver
  - DOR Cards Rev 1/0
  - Second Filter Box
  - Quad cables
  - Breakout boxes
  - Optical equipment

DESY-FATs Review 2004/2005

- **FAT I – September/October 2004**
  - 25 DOMs tested – 20 classified for shipping
    - 1 HV stability failure, 1 reboot failure
    - 3 Gel inspection failures
- **FAT II – November 2004**
  - 25 (4 Swedish) DOMs tested – 12 classified for shipping
    - 1 Flasher Board failure
    - 13 Gel inspection failures
- **FAT III – January 2005**
  - 20 DOMs tested – 17 classified for shipping
    - 1 STF failure, 3 Flasher Board failures
- **FAT IV (C.A.E.N HV Generator) – February/March 2005**
  - 5(3) DOMs with CAEN(EMCO) HV Generator
  - No significant differences to FAT III observed

Dark Noise Rates

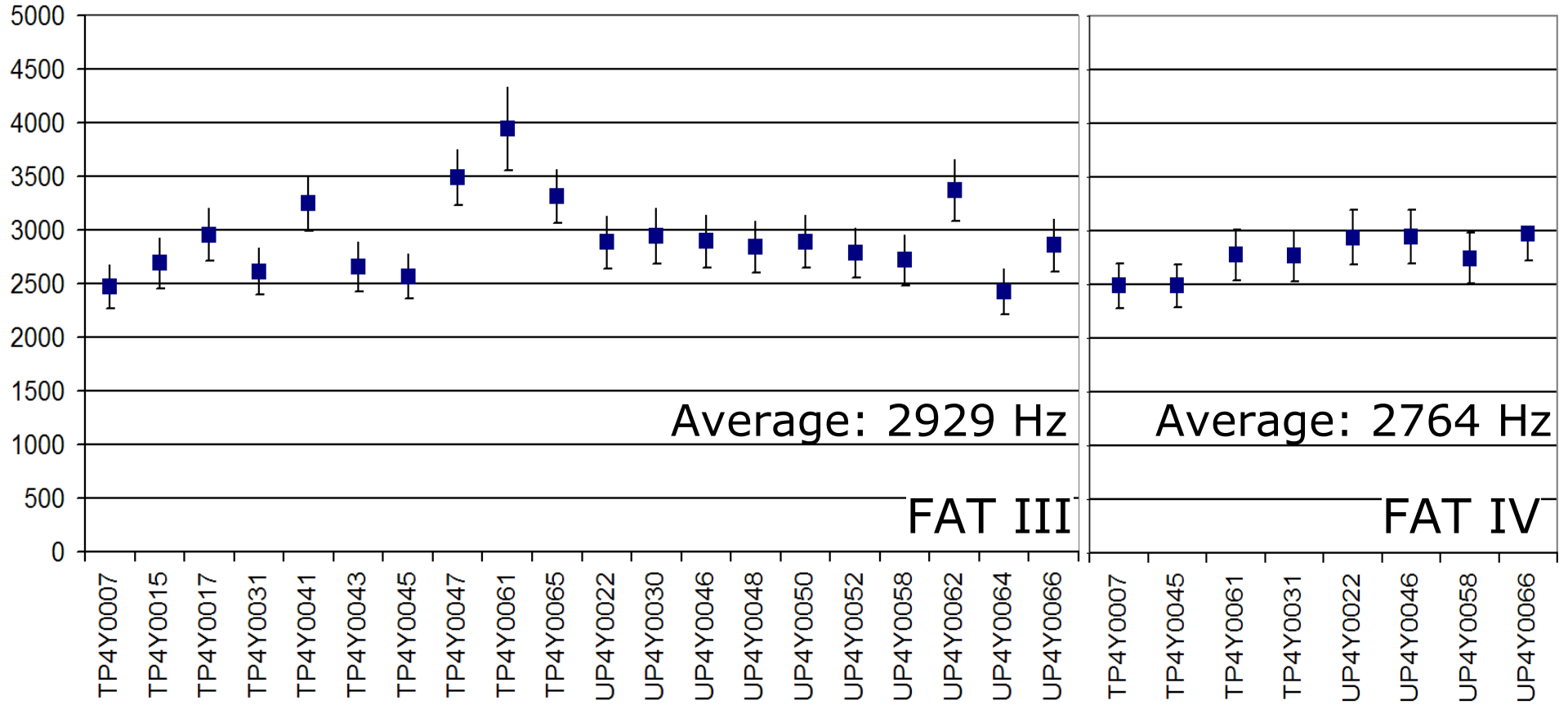
Averaged noise rates at – 45°C monitored with multimon



- Noise rates in FAT II slightly reduced
- Spreading of noise rates is smaller

Dark Noise Rates

Averaged noise rates at – 45°C monitored with multimon



- Changes for FAT IV:
  - Improved cabling and grounding
  - DOMs were better covered with curtains

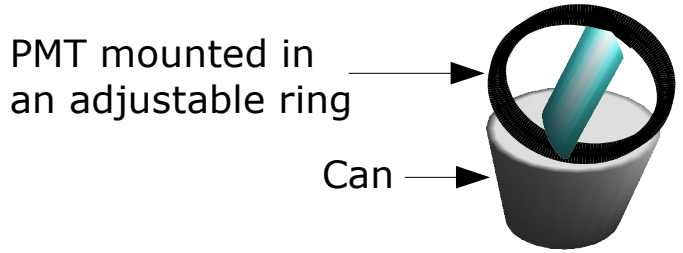
Studies of FAT Data

- We can analyze...
  - STF Results
    - restricted to known parameters
    - inconvenient database interface (expert knowledge required)
  - Dark Noise Rates
  - DOM Calibration Results
    - auto-generated plots
    - Kael's summary-sheet script
  - Charge distribution of testdaq data (in an early stage)

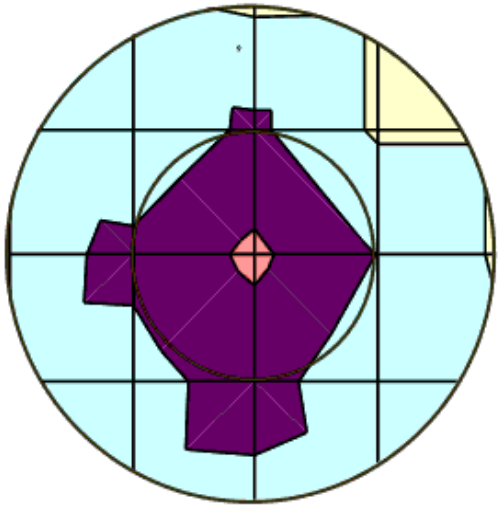
- We are missing...
  - Analysis tools for the testdaq data (DOMTest)
  - Global used DOM FAT Summary-Sheet (DOM passport)
  - Common tool set to read testdaq data for individual analysis
    - Important to qualify DOM characteristics
  - Well documented definition of pass and fail criteria for all tests

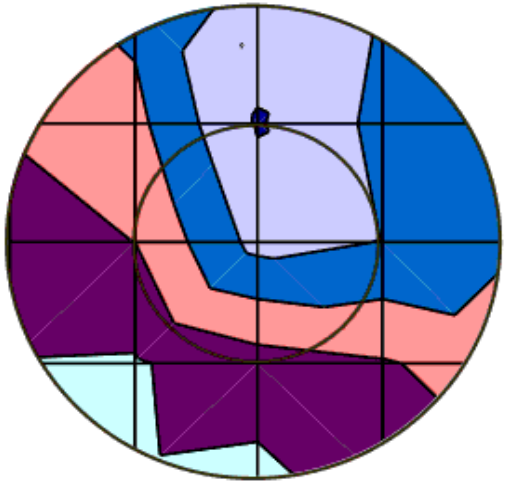
Station Light Profile

- Measurements of light intensity for 9 different positions on top of the can



- Light profile within the can is not uniform
- Light profile varies for individual stations
- Further studies with diffuser plates are planned
- No differences between aluminum and chrome reflector tape observed



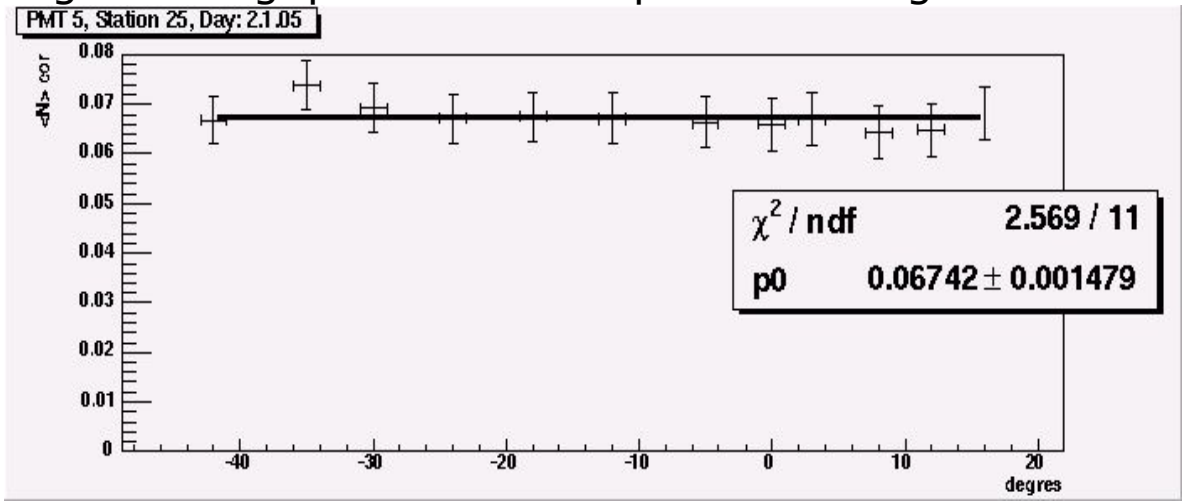


Light profile in a two dimensional area plot. The light intensity distribution is derived from measurements at 9 grid points.

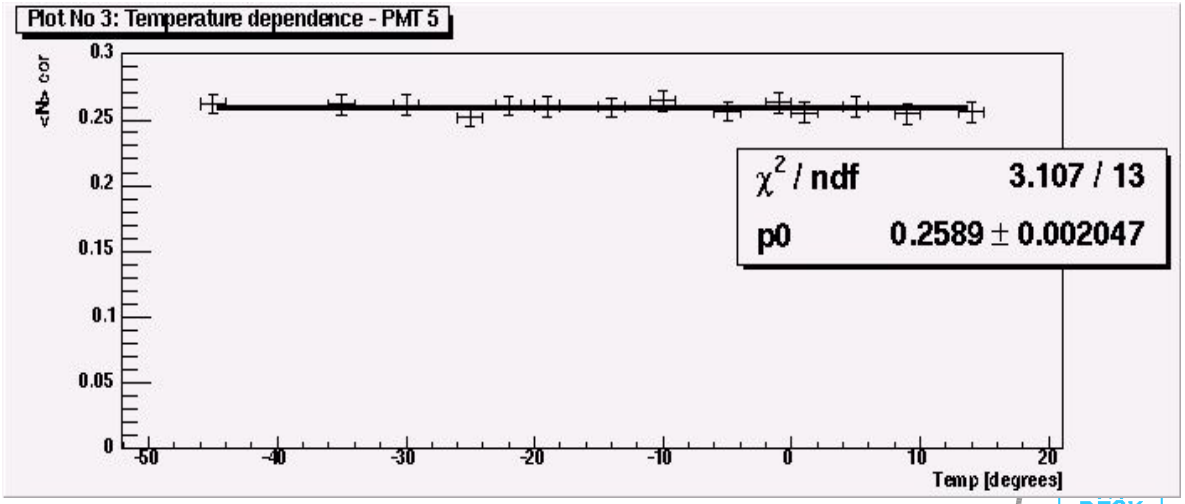
Calibration of the Optical System

- Measurements of the light throughput with triggered Laser pulses and charge sensible ADC DAQ
- No temperature dependency for glass or plastic fibers observed
- Measurements for a set of stations yield comparable results
- Most probably acrylic fibers have a better light throughput ($ø_{glass} < ø_{acryl}$)
- Wavelength dependency studies are ongoing

Light throughput versus temperature for glass fibers



Light throughput versus temperature for plastic fibers



Preparations for next production season

- Optic: use last year's system but acrylic diffuser
- Hardware: Problems with on time delivery
  - GPS receiver
  - Cable, Filter Box, Breakout Boxes, DOR Cards
  - DOM components (Gel, HV, Mainboards...)
- Most probably equipment availability is behind schedule (remember things have to be installed)
- Next FAT is scheduled to the middle of May
- Presumably a delay of 2(?) weeks