IOS update on Brewer software
(and hardware)

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IOS continue updating the Brewer operational software

- Current version is 4.10
  - Works under Wx64 with DosBox
  - AUTO.RTN is a configurable auto routine that takes pressure off thinking about a good, balanced schedule
  - APPEND.BAT (thanks Henri!) works well with DosBox after a slight modification
  - Under normal operation something is written to the b-files at least every 10 min to help automated processes decide whether everything is still working

Hardware.
And its setup.

- **Neutral density filters**
  - We have recently ran into 2 Brewers with extremely poor set of the NDF. The attenuation spacing was designed to be 10^0.5 (approx, a factor of 3.2), but in these Brewers it was 10^0.8 (a factor of 6.3). This leads to noisy data. Check your Brewer!

- **The PMT High Voltage**
  - The new Hamamtsu PMTs are changing rapidly in the first few months of operation. If your Brewer has serial number > #190 and the HV has never been changed it is likely far from optimal

  SL voltage
  - Getting better, but many Brewers have SL power set below 13W, which means dim light. In SB Brewers with the original lamp board this practically cannot be changed.
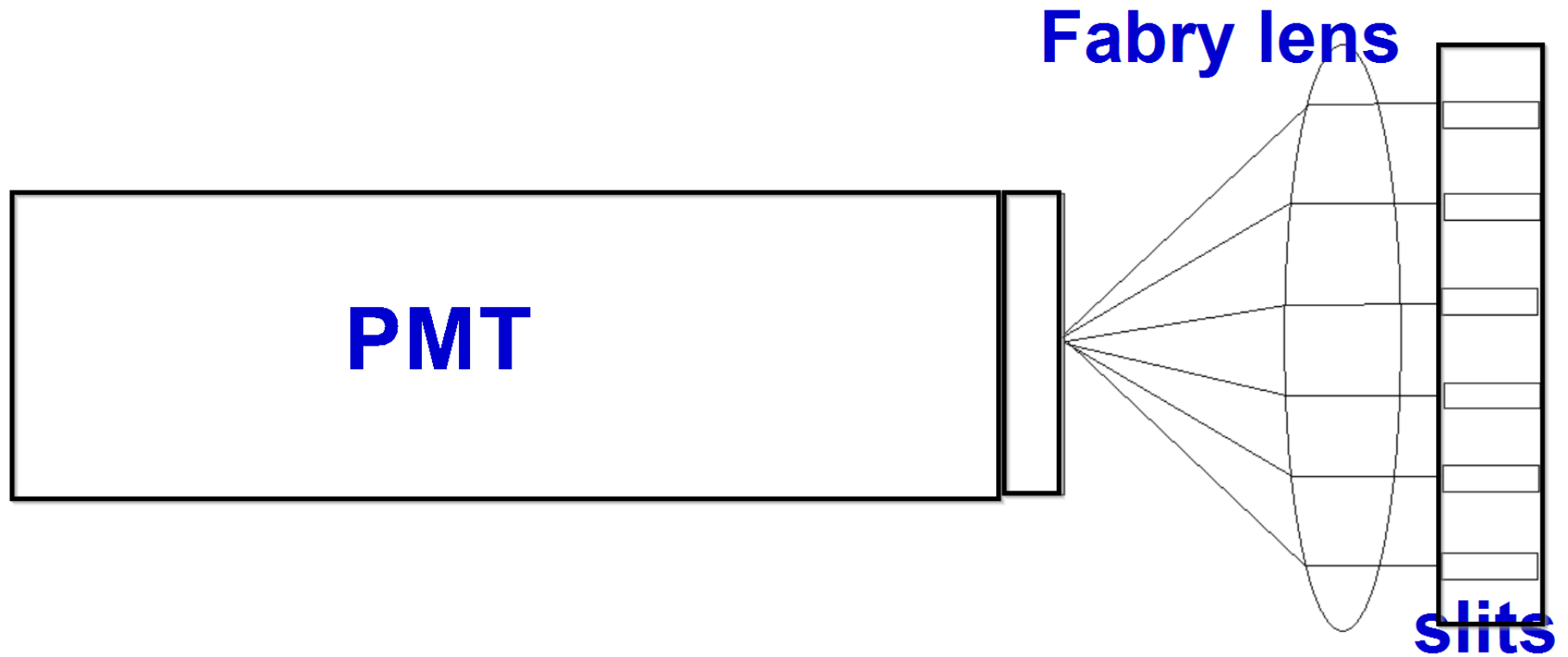
NiSO4+UG11 combo filter

- In MKII it is sealed between the PMT and the lens, it is stationary

  – Less (slower) degradation

  – Cannot be scanned to assess its health

- In MKIV the filter is in a filterwheel, not very well sealed and moving

  – Faster degradation
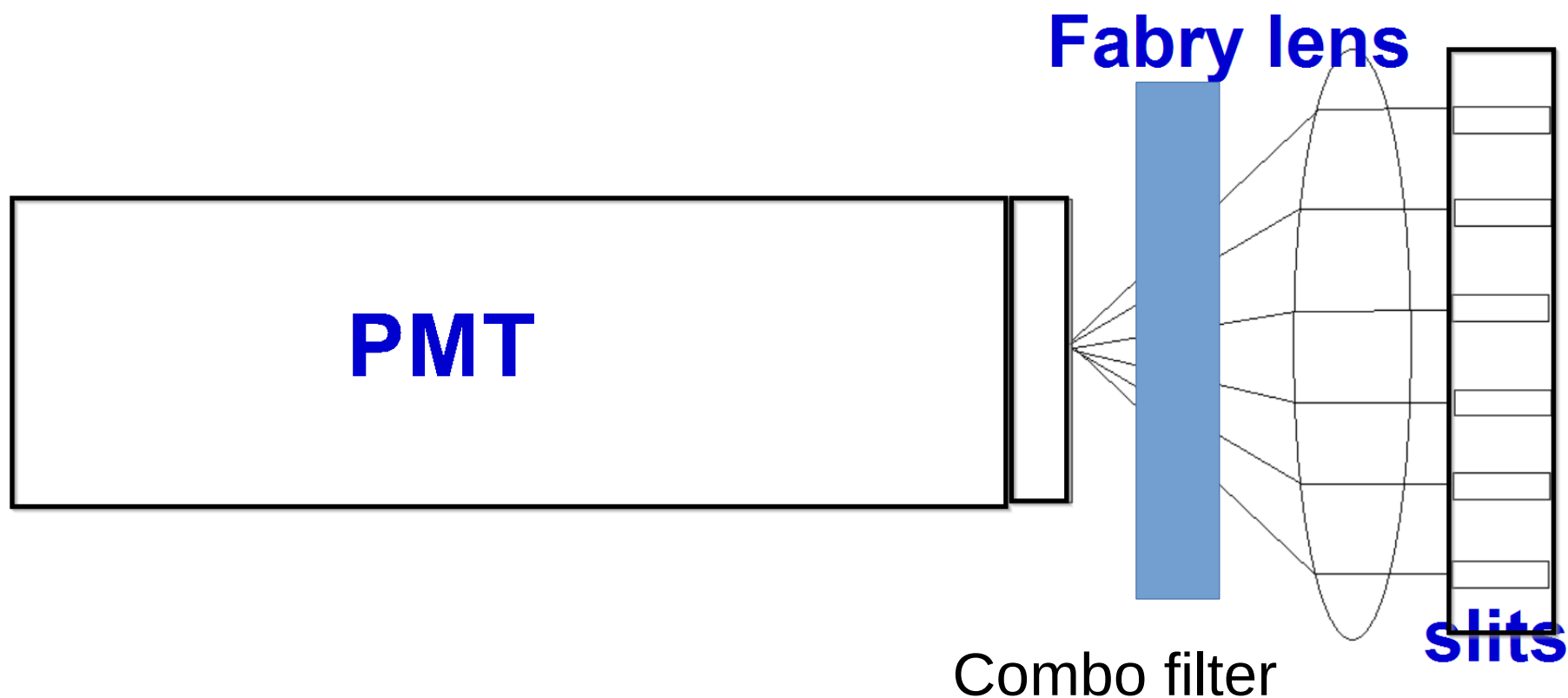
  – We can assess its health

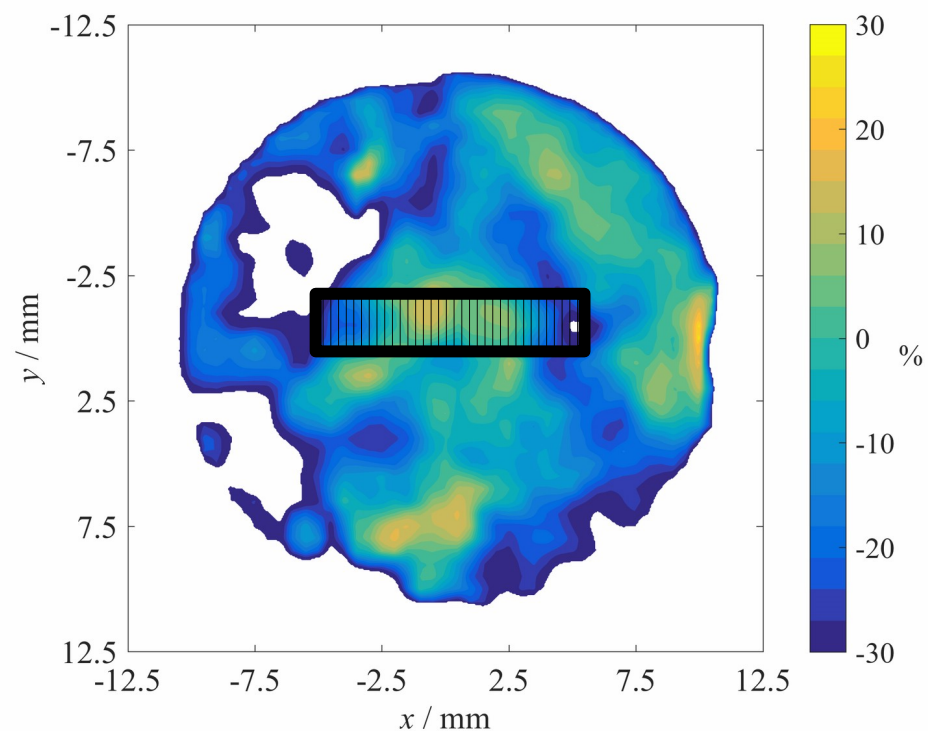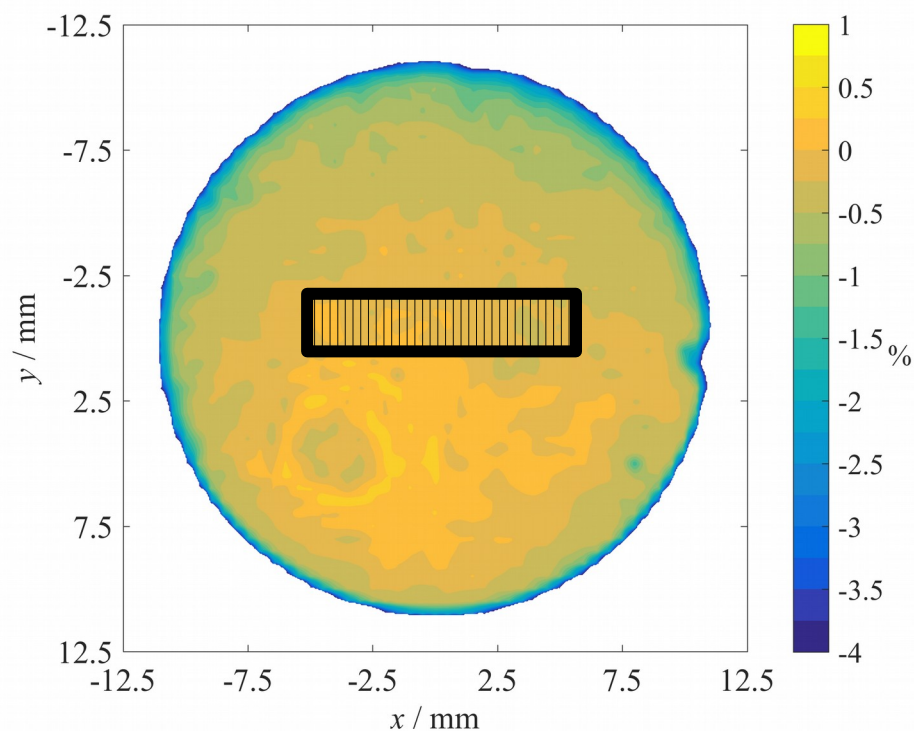# Where the problems with the combo filter come from

PMT

Fabry lens

slits

Where the problems with the combo filter come from
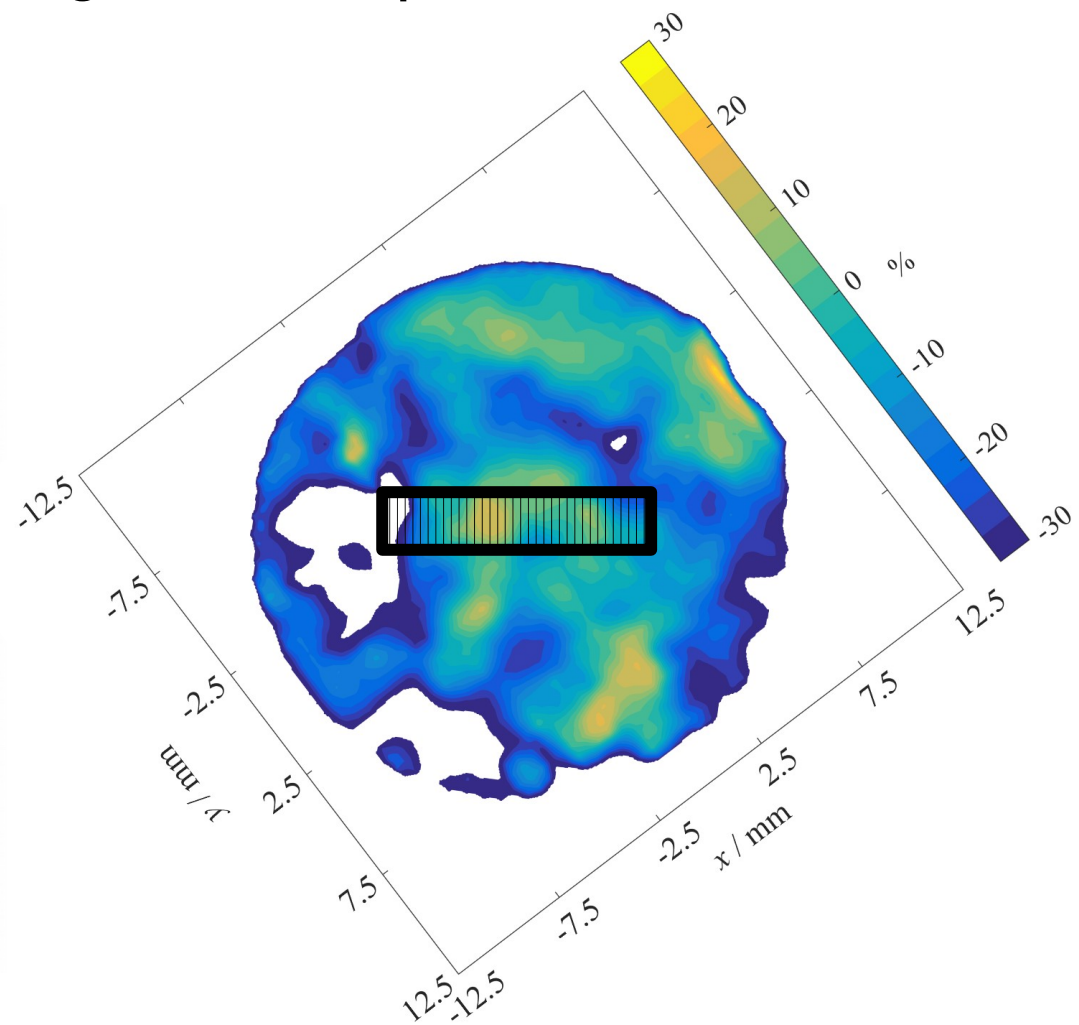
Fabry lens
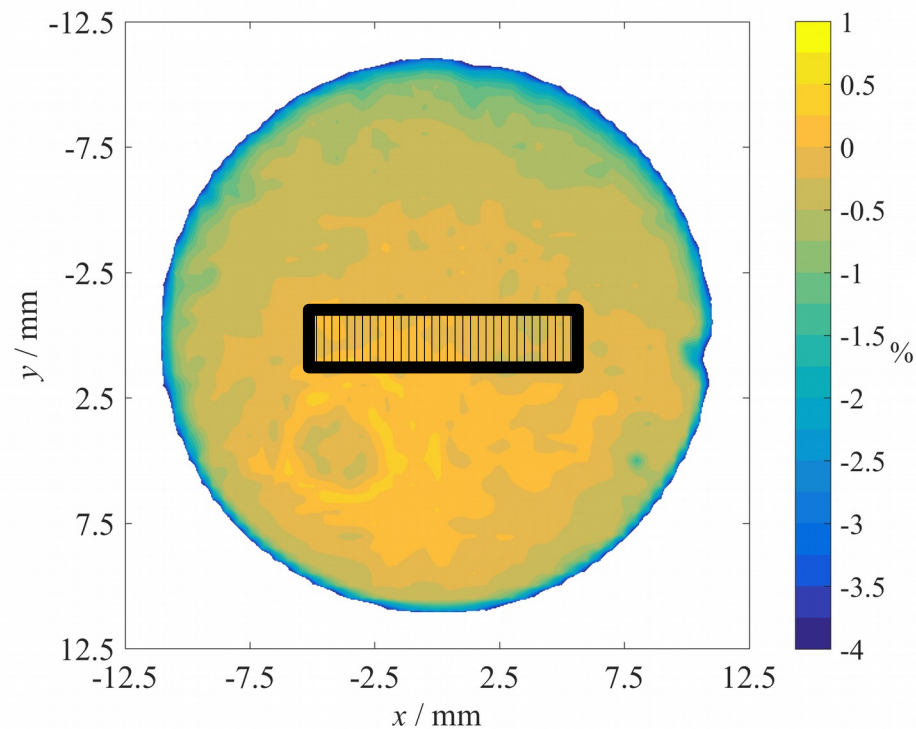
PMT

slits

Combo filter

Light from each slit goes through its own portion of the filter

Filter scans courtesy of *Tomi Pulli*

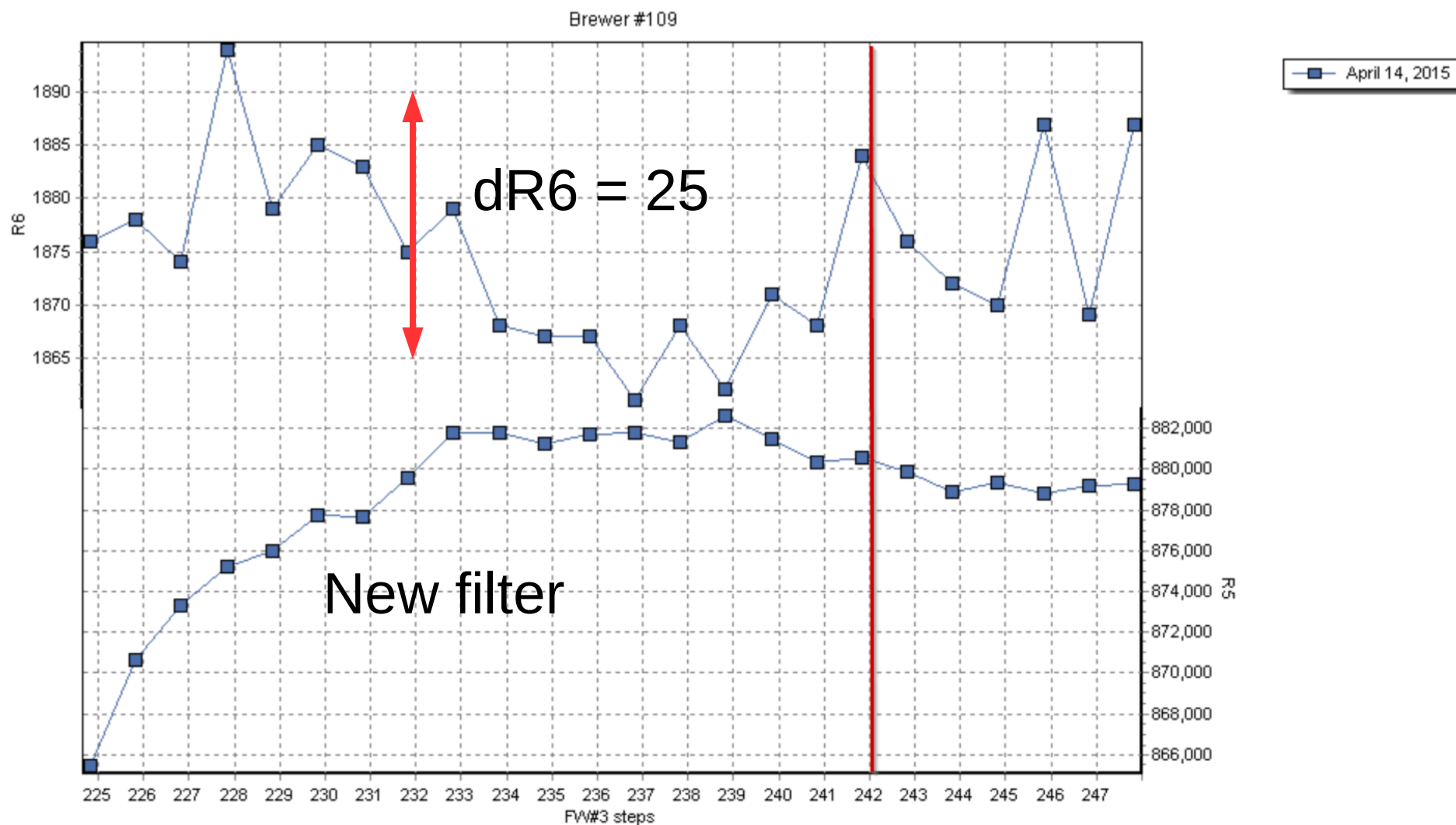# Light from each slit goes through its own portion of the filter

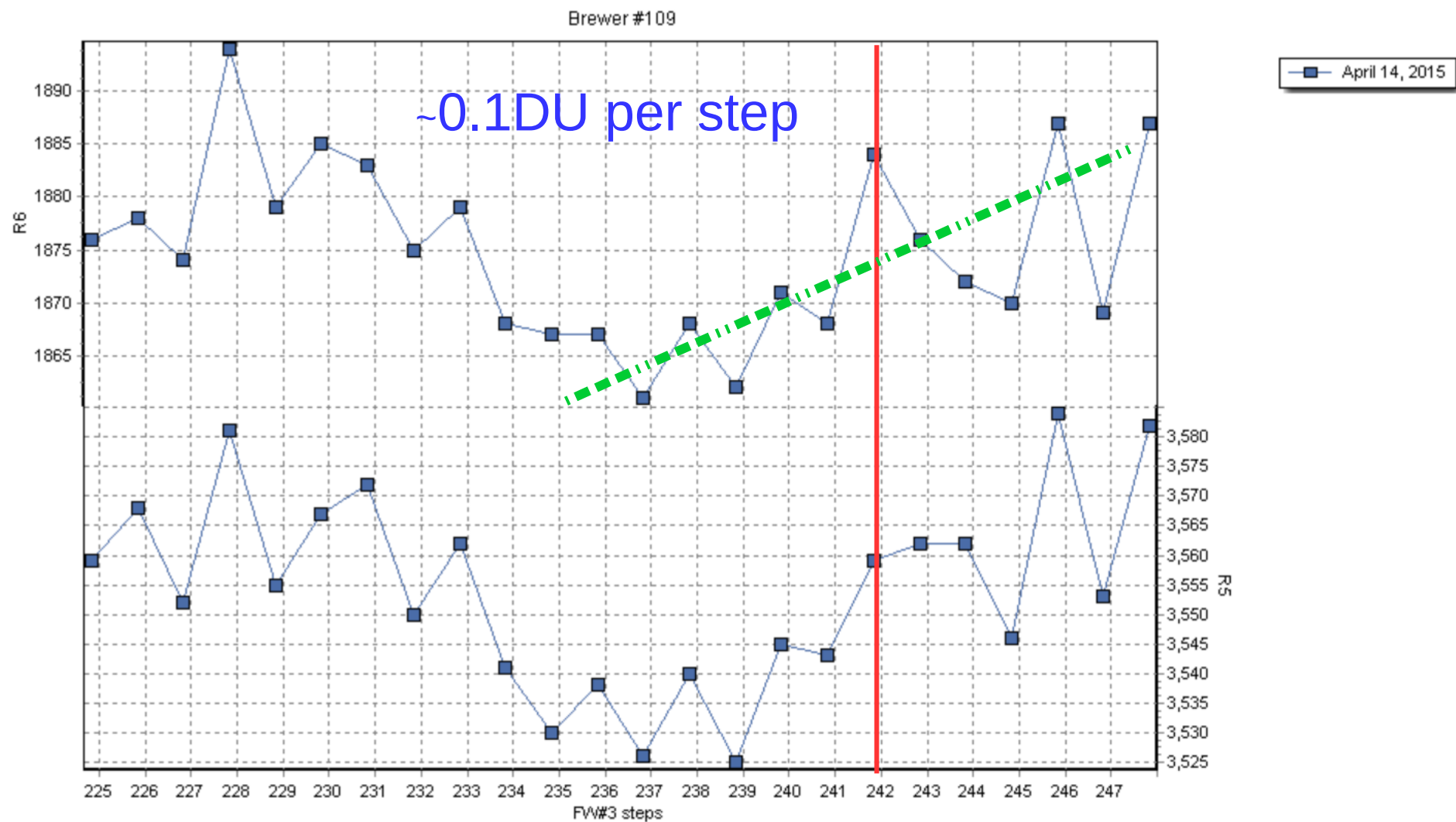Filter scans courtesy of *Tomi Pulli*

Scans of the filters in MKIVs

Brewer #109

dR6 = 25

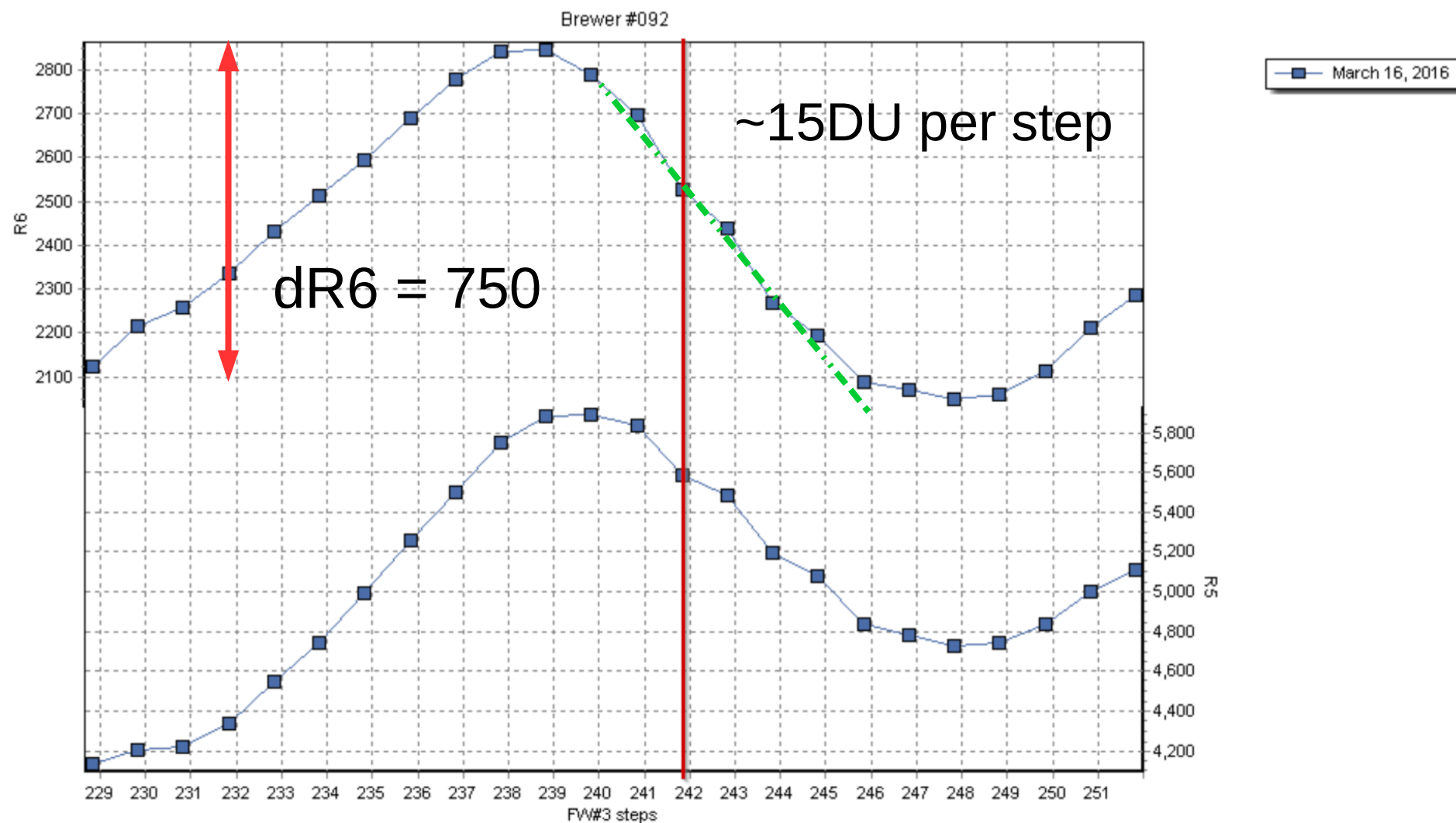New filter

April 14, 2015

Scans of the filters in MKIVs

Scans of the filters in MKIVs

Brewer #092

~15DU per step

dR6 = 750

March 16, 2016

Thank you.

Next slide is to show laser scans of many Brewers if there is time and interest

all available Brewer laser scans

wavelength setting (nm*10) — log10(normalized signal)

Legend:
- 007MKIVf
- 009MKIV
- 012MKII
- 014MKII
- 015MKII
- 017MKII
- 021MKIII
- 029MKV
- 033MKII
- 037MKII
- 042MKV
- 053MKII
- 055MKII
- 069MKV
- 071MKIV
- 079MKIV
- 082MKIVe
- 084MKIV
- 085MKIII
- 107MKIII
- 109MKIVe
- 111MKIII
- 113MKII
- 128MKIII
- 507mkivf
- 521mkiii
- 585mkiii
- 645mkiii