



# Status Forward Endcap EMC

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Thomas Held

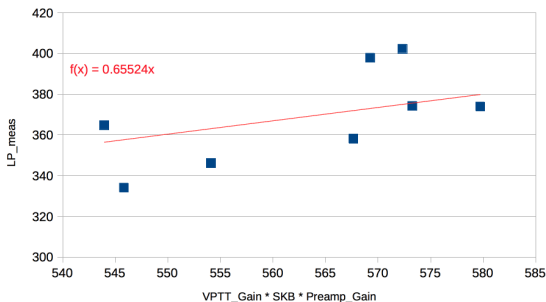
Ruhr-Universität Bochum  
Institut für Experimentalphysik I

## VPTT Submodule Production

- Still suffering from preamp gain problem:  
165 crystal-tube-preamp units containing preamps of unknown gain
- Preamp gain at that time assumed to be constant: no free parameter in assignment algorithm
- Indirect determination of gain by comparison to units build from precisely measured preamps
- Comparison of LP response: mirror foil excluded (higher precision)
- 'Half and half' submodule built:  
spread well within  $\pm 10\%$  of mean (rather than  $+20/-10\%$ )

# VPTT Submodule Production

- Scaling (conversion factor  $c$ ) originally derived from only two model units:
- $$C = \frac{LP \text{ response}}{tube \text{ gain} \times QE \times preamp \text{ gain}}$$
- With every new build unit we get an additional  $c$ -value, iteratively improving the scaling (slope)



## VPTT Submodule Production

- Resulting preamp-gain distributions:
  - ▶ Mean of 1.027 V/pC ( $\sigma = 0.153$  V/pC)  
(165 already glued units)
  - ▶ Mean of 1.084 V/pC ( $\sigma = 0.115$  V/pC)  
(745 measured preamp gain)
- Randomly picked 10 units out of the VPTT region of the forward endcap (rather than a single submodule)
- ⇒ Prevent artifacts from sorting algorithm (combining tubes, preamps with similar gain in groups of 4 (common HV channel))
- Does the spread decrease/not increase?
- ⇒ Need to build more submodules
- Production restarted

## VPTT Submodule Production

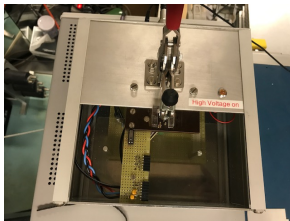
- Consequence of submodule production delay:  
M9 ('Acceptance test completed') not in Q1/19
- In order to prevent repeated shifts we would like to move  
M9 and M10 ('Approval for installation) closer to M11, M12
- Detector sitting in working condition in Jülich:  
what can be done when/where?
- M11 ('Ready for beam')?
- M12 ('Ready for operations')?

# APD Screening Setup

- We are still in the process of setting up an APD screening facility in Bochum
- Rebuild of previous setup to accept new APDs from Hamamatsu rather than PSL-lab pieces (gold cup adaptors)
- New PhD student Jan Reher conducting screening
- Envisaged throughput is about 250 pieces per week

# APD-Preamps

- While we have all preamps for the VPTT submodules we still need to get the APD preamps
- All APD-Preamps produced now, delivery to Basel soon
- Werner managed to screen 1500 - 2000 preamps until he left Basel university last week
- Basel electronics workshop will take over this task (person instructed by Werner), maybe one additional student to be hired, data analysis to be supervised by post doc Alex Kaeser



## Associate Losses

- Three forward endcap EMC related losses this year yet (I know of)
- Karoly Makonyi (Stockholm)
- Werner Erni (Basel)
- Natalie Walford (Basel)
- Kicked out of science by means of the system rather than a voluntary leave
- Thank you for the good cooperation and your support for  $\overline{\text{PANDA}}$  !
- Good luck on your future paths!



- Manipulator arm (CMS) shipped from CERN to FZ Jülich

