

# CALIFA DAQ

## Readout and Electronics status update



Tobias Jenegger

R<sup>3</sup>B Week May 2023

Current Status

Filling CEPA

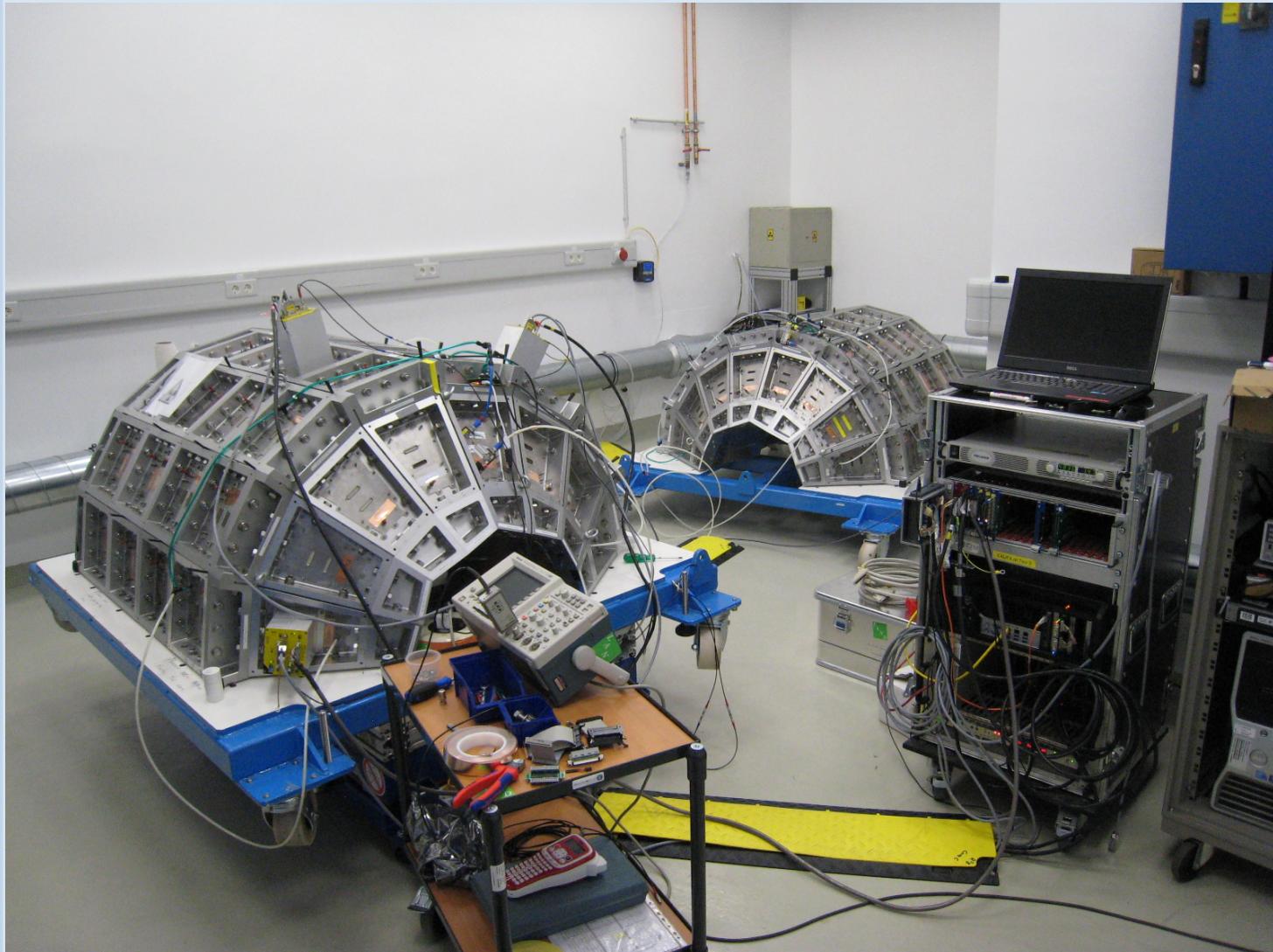
Final Electronics Configuration

Funded by the Deutsche Forschungsgemeinschaft (DFG, German Research Foundation) under Germany's Excellence Strategy – EXC-2094 – 390783311, BMBF 05P19WOFN1, 05P21WOFN1 and the FAIR Phase-0 program

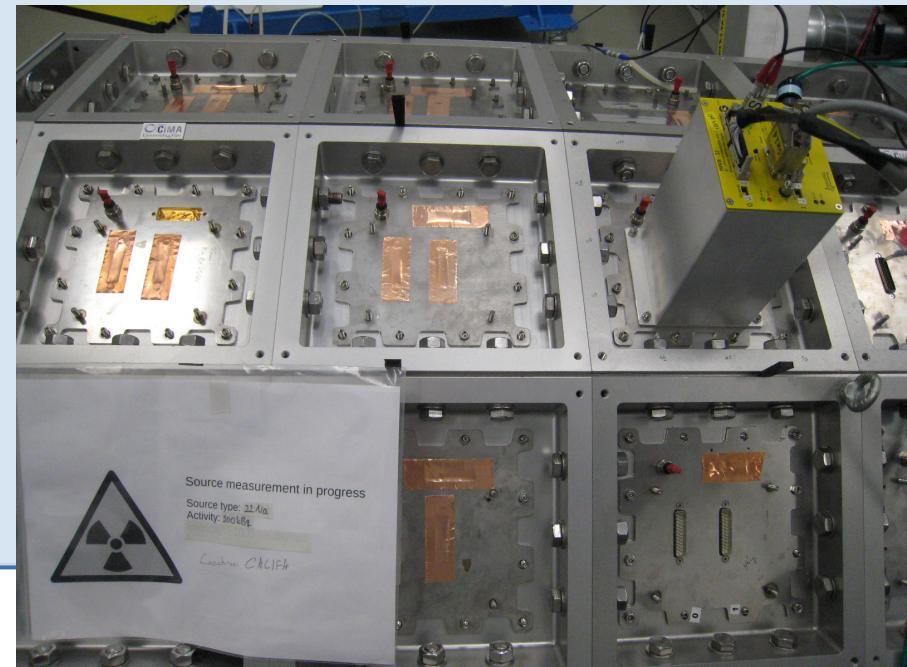
# Where is CALIFA?



# Meanwhile in R<sup>3</sup>B Preparation ROOM ....



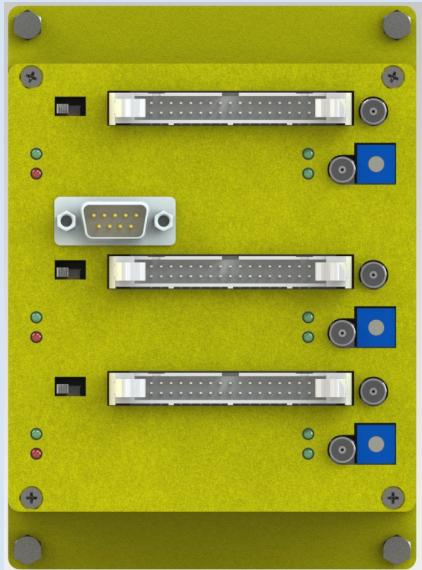
- Noise debugging
- Cable/connectors checking
- Etc.
- More in Stefan Eder's talk



- Most forward section:  $7^\circ \leq \theta \leq 19^\circ$
- 96 CsI crystals

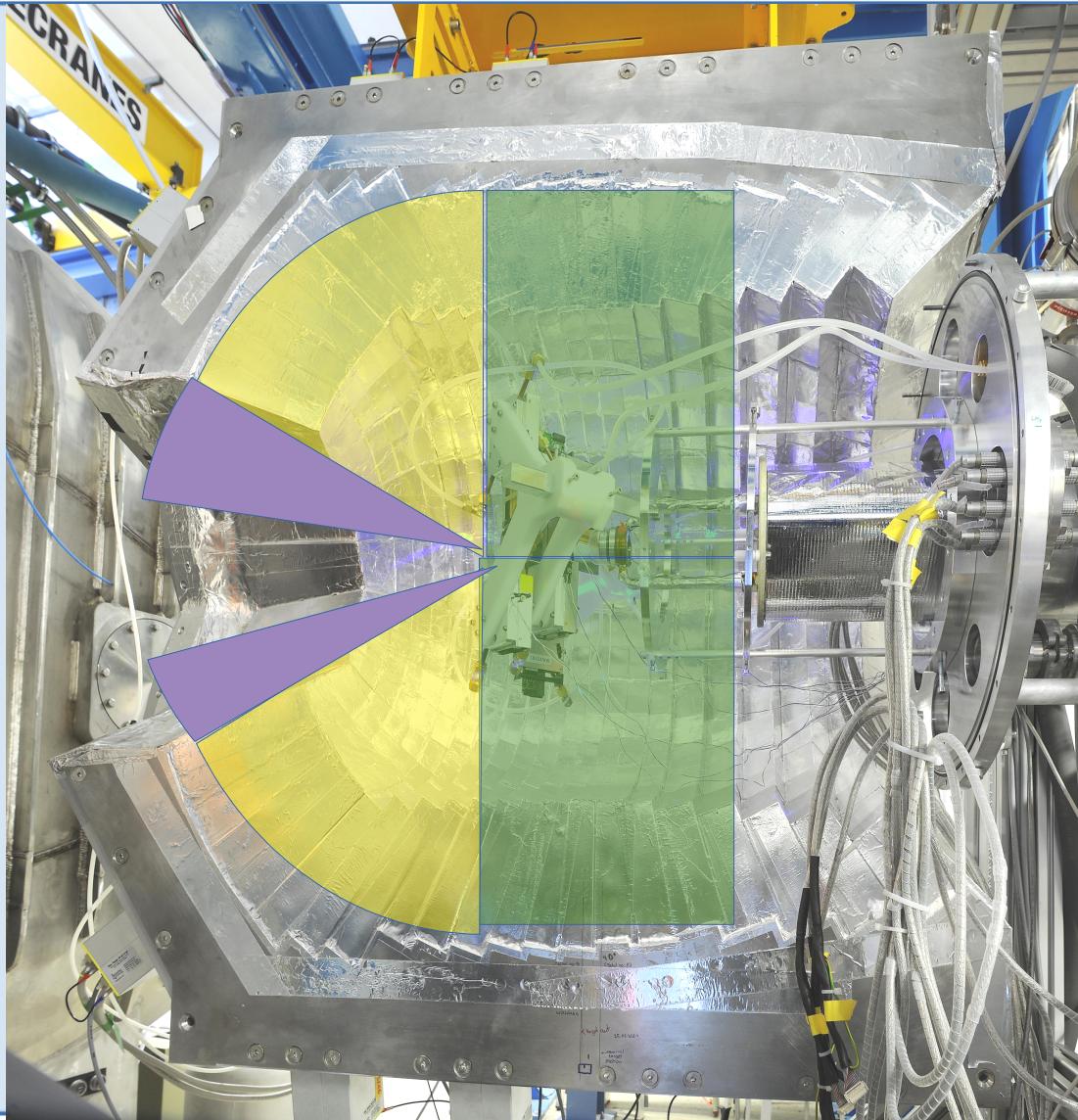
### Mesytec MPRB-48 Dual Range Preamps

They get mounted on iPhos tiles

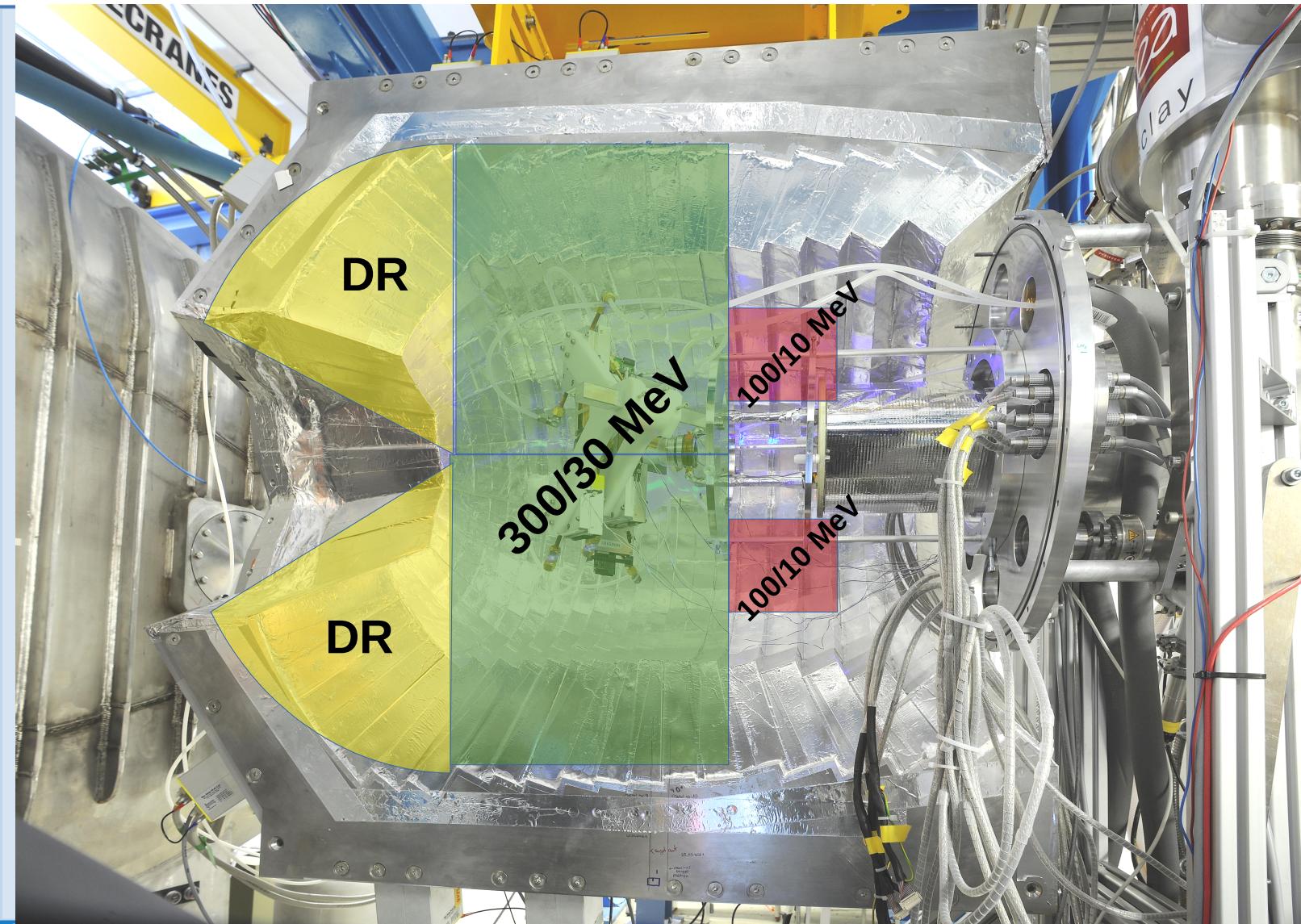


Connected to iPhos APDs  
(32 channels)

Connected to CEPA APDs  
(16 channels)



# CALIFA Configuration (S522, 2022)



## iPhos:

- completely filled
- readout with Dual Range Preamps

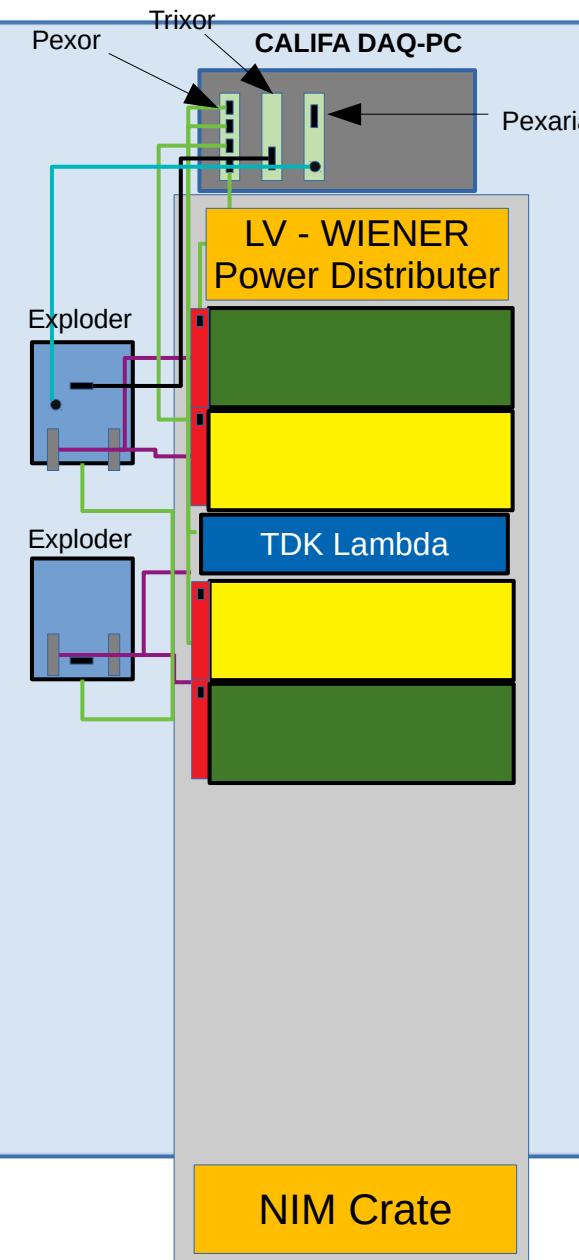
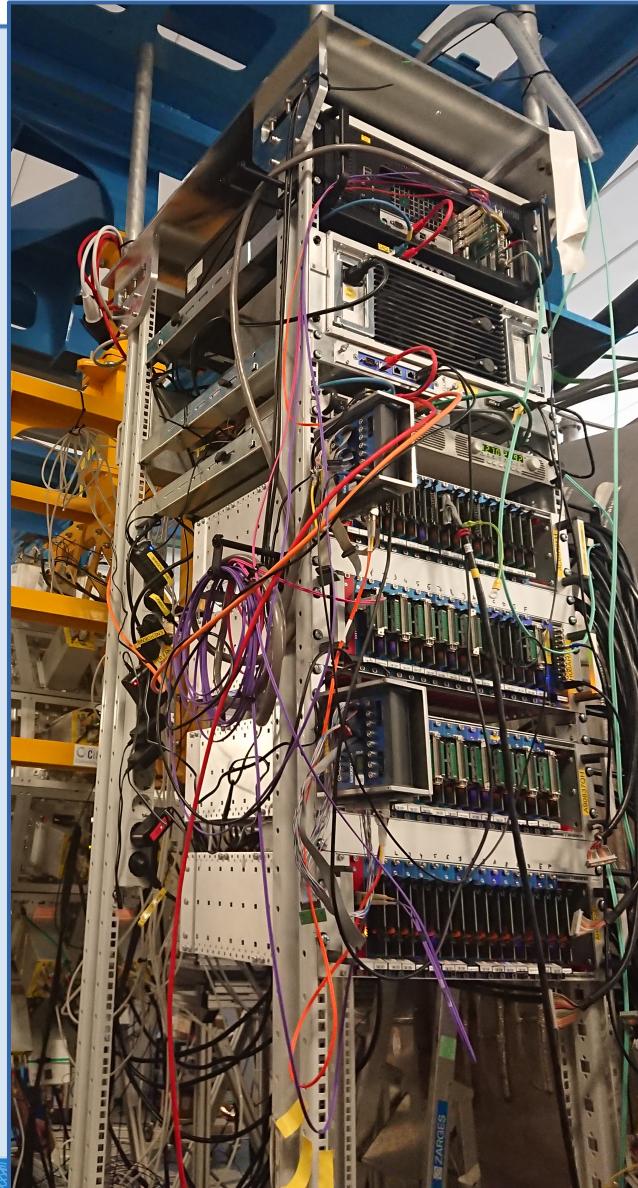
## Barrel:

- Half filled (Ring 3&4)
- Readout with Single Range (300/30 MeV) Preamps

## Pulser:

- 2 SR 100/10 MeV Preamps
- For deadtime/sync checking

# CALIFA DAQ Status (S522, 2022)



## Electronic Rack

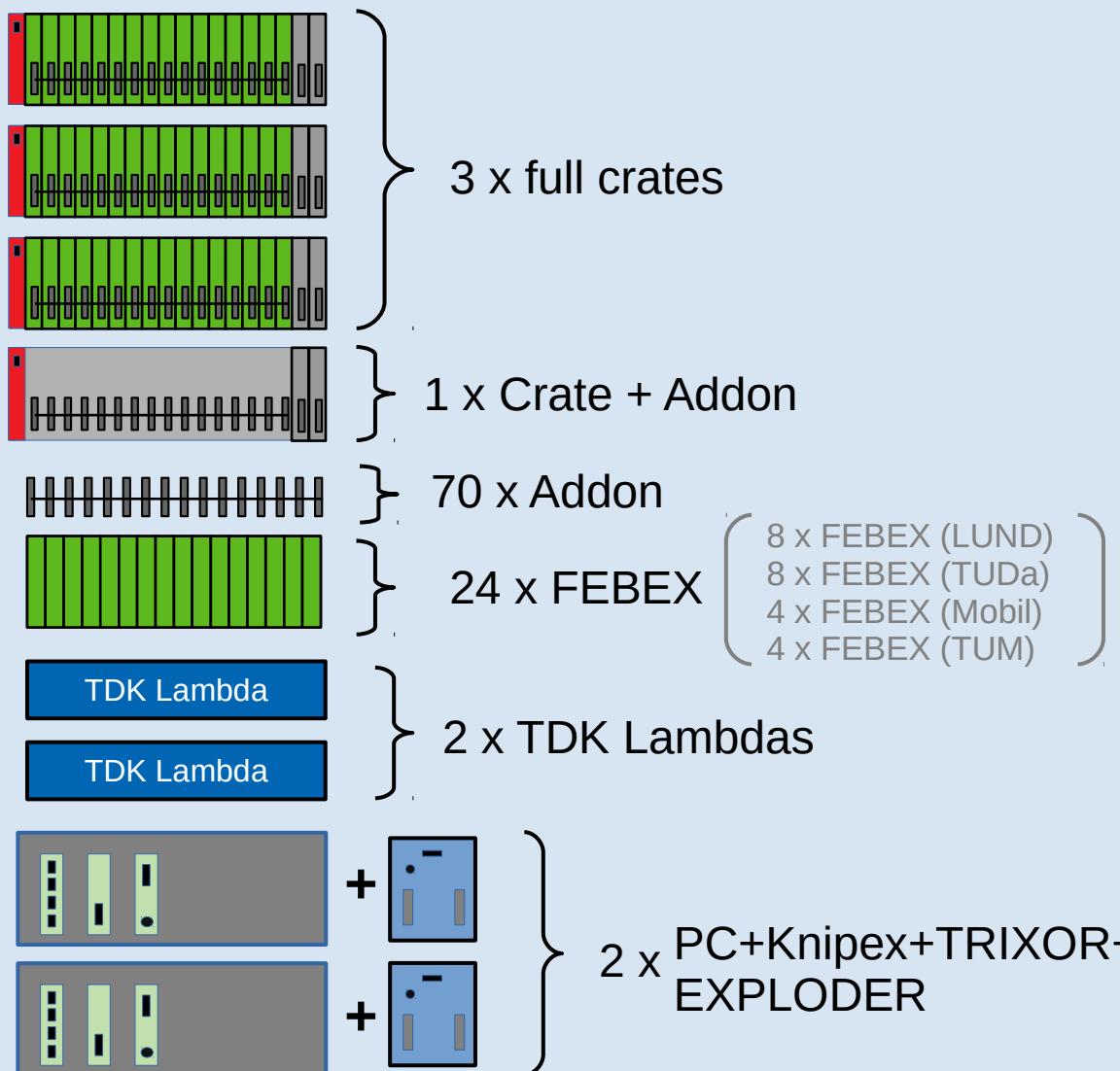
- 8 Crates (each with 18 x FEBEX + Addon)
- 2 PCs (with Knipex+TRIXOR)
- 2 TDK Lambda
- 4 Exploder
- 1 “Overlord” Exploder
- 2 Slow Control PCs

## Cables

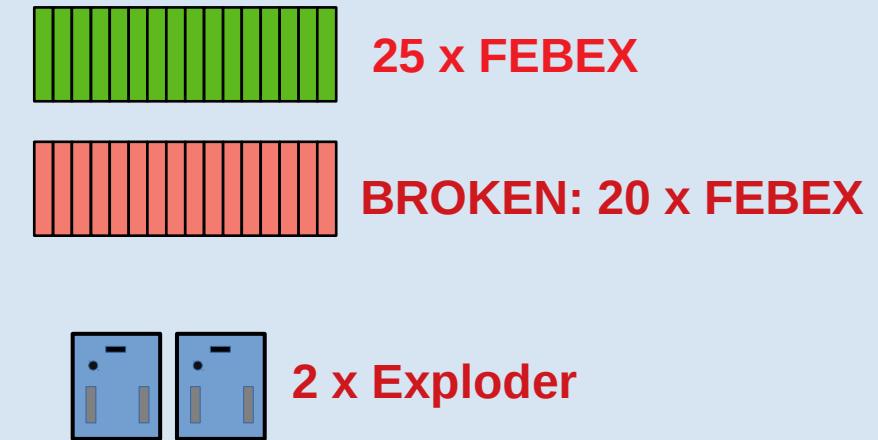
- 32 SCSI data cables (iPhos)
- 64+2 SR data cables (Barrel)
- 48 LV power cables

# What do we have still in Stock?

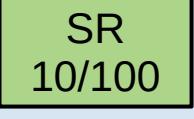
## Stock



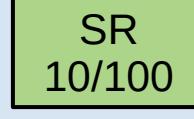
## Missing compared to order status



## Stock

	8 x 30/300 DR32
	4 x 30/300 SR32
	5 x 10/100 SR32
	8 x SCSI Cables

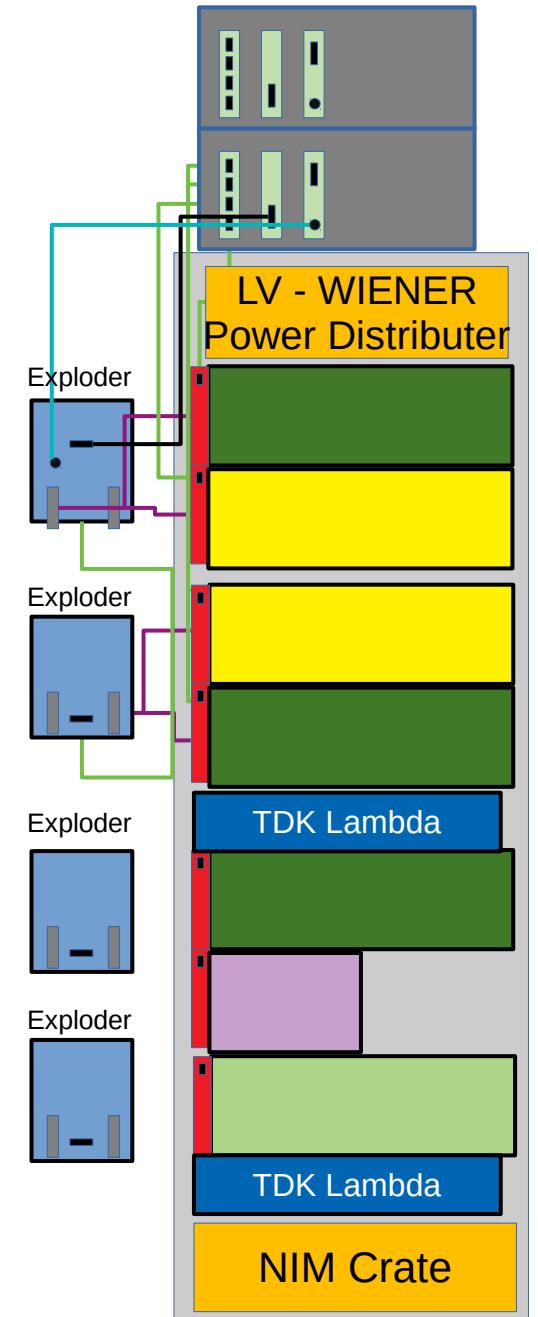
## Missing compared to order status

	1 x DR 30/300
	6 x SR 30/300
	5 x SR 10/100
	11 x Single Cables

# Possible Electronics Configurations

# Default Configuration

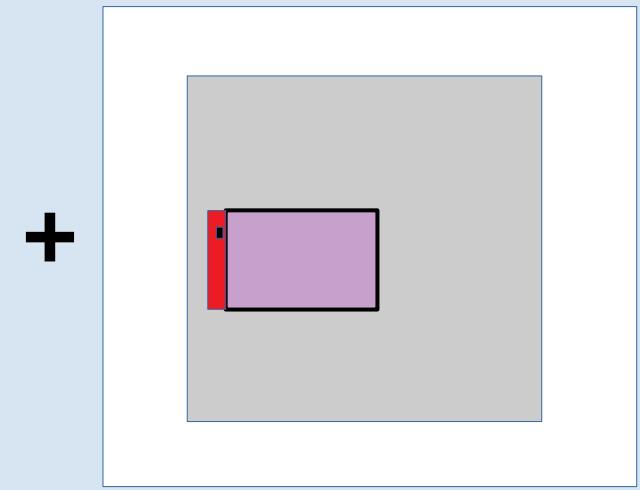
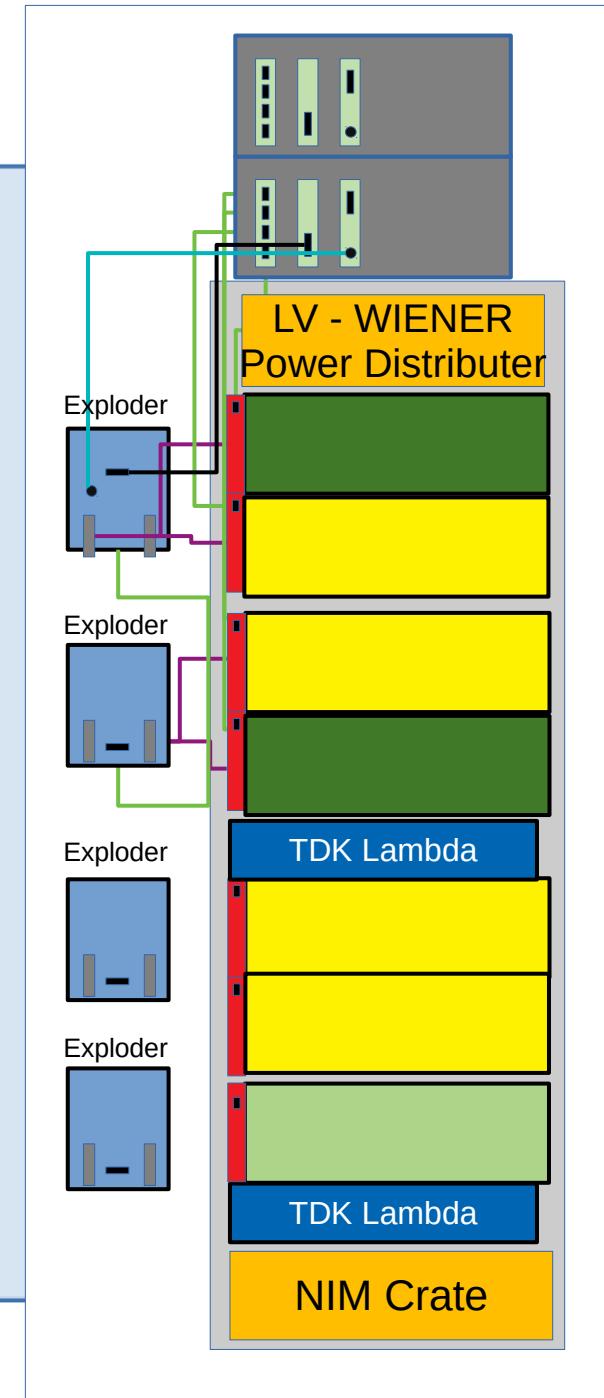
CEPA	iPhos	Ring 4	Ring 3	Ring 2	Ring 1
	DR 30/300	SR 30/300	SR 30/300	SR 30/300	SR 10/100
	DR 30/300	SR 30/300	SR 30/300	SR 30/300	SR 10/100
	DR 48 30/300	SR 30/300	SR 30/300	SR 30/300	SR 10/100
	DR 48 30/300	SR 30/300	SR 30/300	SR 30/300	SR 10/100
	DR 48 30/300	SR 30/300	SR 30/300	SR 30/300	SR 10/100
	DR 48 30/300	SR 30/300	SR 30/300	SR 30/300	SR 10/100
	DR 30/300	SR 30/300	SR 30/300	SR 30/300	SR 10/100
	DR 30/300	SR 30/300	SR 30/300	SR 30/300	SR 10/100



# 4 $\pi$ Configuration

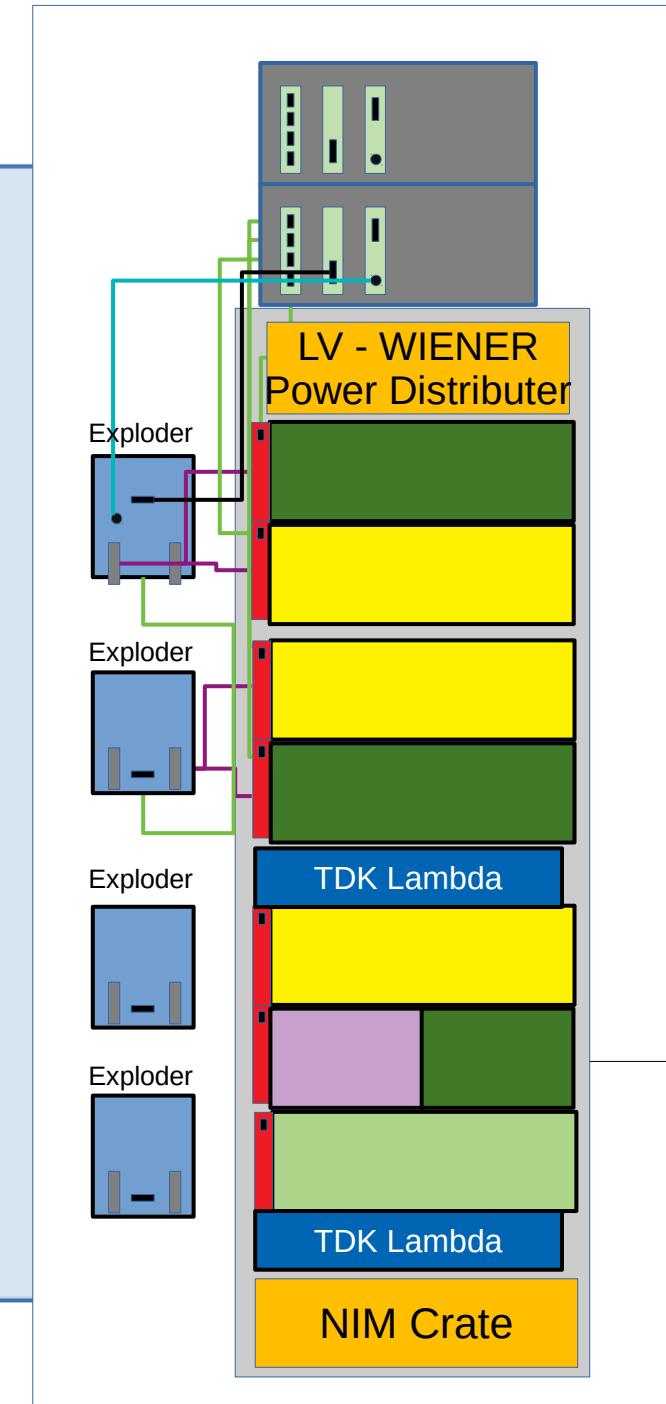
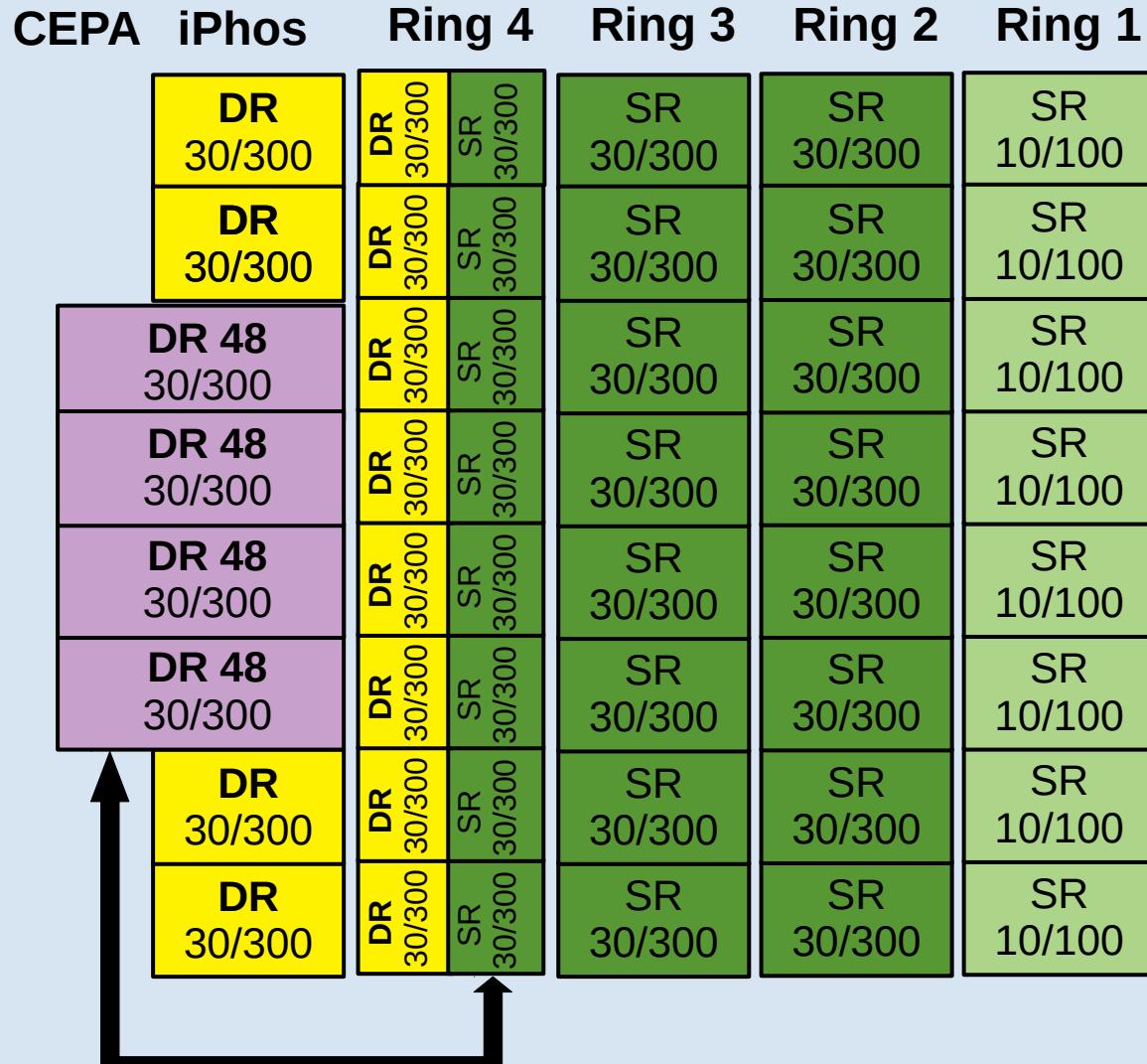
CEPA iPhos Ring 4 Ring 3 Ring 2 Ring 1

DR 30/300	DR 30/300	SR 30/300	SR 30/300	SR 10/100
DR 30/300	DR 30/300	SR 30/300	SR 30/300	SR 10/100
DR 48 30/300	DR 30/300	SR 30/300	SR 30/300	SR 10/100
DR 48 30/300	DR 30/300	SR 30/300	SR 30/300	SR 10/100
DR 48 30/300	DR 30/300	SR 30/300	SR 30/300	SR 10/100
DR 48 30/300	DR 30/300	SR 30/300	SR 30/300	SR 10/100
DR 30/300	DR 30/300	SR 30/300	SR 30/300	SR 10/100
DR 30/300	DR 30/300	SR 30/300	SR 30/300	SR 10/100



Second Rack on each side needed!

# Mixed Configuration



# Comparison

## Default Config.

### Workload:

- Minimum DAQ effort
- Find missing 18 x FEBEX
- Find 2 missing EXPLODERS
- Modify 12DR32 into 8xDR48 (16k€)

### Orders:

- 12 x SR32 30/300 (60 k€)
- 11 x SR32 10/100 (55 k€)
- + 3 spares (15 k€)
- Modify 2 FEBEX CRATES (4 k€)
- 18 new FEBEX Cards (20 k€)

Sum: 170k€



As planned



Issues with punch trough at 42-60°

## 4π Config.

### Workload:

- Minimum DAQ effort
- Find missing 18 x FEBEX
- Find 2 missing EXPLODERS

### Orders:

- 8 x DR 48 30/300 (60 k€)
- 8 x SR32 30/300 10/100 (40 k€)
- 11 x SR32 10/100 (55 k€)
- + 3 spares (15 k€)
- Modify 4 FEBEX CRATES (8 k€)
- 54 new FEBEX Cards (60 k€)
- Low voltage extension (20 k€)

Sum: 248k€



All features in - 4π save



More data, less spares  
Two more racks needed

## Mixed Config.

### Workload:

- Some DAQ effort
- Find missing 18 x FEBEX
- Find 2 missing EXPLODERS
- Modify 16xSR-DR mixed (16k€)

### Orders:

- 8 x DR 48 30/300 (60 k€)
- 8 x SR32 30/300 10/100 (40 k€)
- + 3 spares (15 k€)
- Modify 2 FEBEX CRATES (4 k€)
- 36 new FEBEX Cards (40 k€)

Sum: 180k€



All features in - 4π save



More modifications @ Mesytec



# Thank you!

**CALIFA @ Technical University of Munich (TUM)**

Roman Gernhäuser, Lukas Ponnath, Philipp Klenze, Tobias Jenegger



GEFÖRDERT VOM

