

# ONSEN

## Phase 2 and preparation plans

# Phase 2

- ONSEN running for >30 days without reboot/reprogram
- 1<sup>st</sup> data acquisition w/ DATCON (dummy ROIs)
- ROIs by HLT switched to from full ladder to calculated
- Data checks helped detecting wrong DHH settings
- global high rate tests pending (30 kHz achieved with empty DHC data)

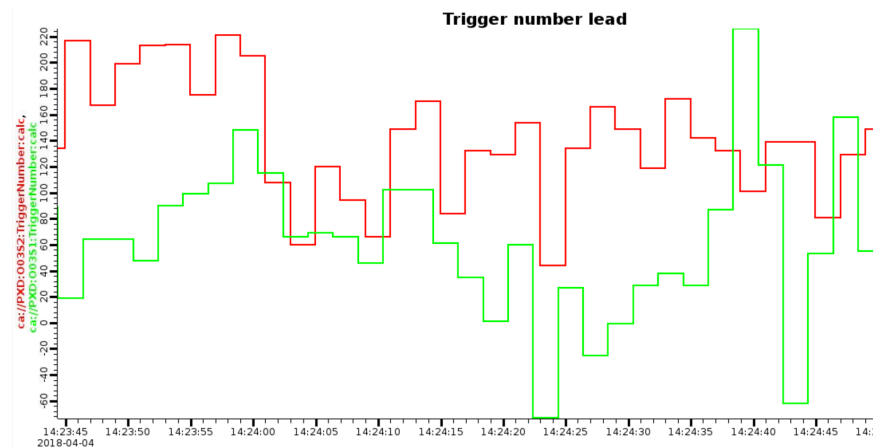
<input checked="" type="radio"/> All checks valid		config-DB <input type="checkbox"/>		
loca use				
valid	cur	req	req	
<input checked="" type="radio"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Check of word count in DHC End frame
<input checked="" type="radio"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Check of word count in DHE End frame
<input checked="" type="radio"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Check of DHC-ID consistency
<input checked="" type="radio"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Check of DHE-ID consistency
<input checked="" type="radio"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Check of DHE-ID increase
<input checked="" type="radio"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Check of DHP-ID consistency
<input checked="" type="radio"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Check of correct Start-Of-Row in ZS frame
<input checked="" type="radio"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Check of trigger number consistency (lower 16 bit)
<input checked="" type="radio"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Check of trigger number consistency (upper 16 bit)
<input checked="" type="radio"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Check of DHP FrameID (+1 or +2 per DHP)

# Development update

- ROI distribution nearly finished
  - further tests required (~ June 2018), but should be ready to test with full setup
- ATCA 10 Gbps uplink switch
  - waiting for KEK DAQ people to decide, but they are busy atm.
- EPICS improvements
  - error messages, Flash recovery system, ..
  - Update to new EPICS version

# New ONSEN errors so far observed in phase 2 running

- Trigger number mismatch after ROI merging
  - while running w/ DATCON, but data is *not* stored for that run
- negative trigger lead < 0
  - HLT trigger number is lower than trigger number in DHH data  
=> HLT is faster than pixel data (observed on Apr. 4<sup>th</sup> two times in a row)  
could not be reproduced so far...



# Preparation at DESY

- DAQ tests can be supported by ONSSEN, but tentative schedule would be very helpful
- DAQ racks will *not* be moved back to the roof
- all ONSSEN hardware will be at DESY before shipping to KEK
  - Plan: ship 9 carrier boards w/ AMCs to KEK (3 already at KEK)
  - keep 2 carrier boards w/ AMCs (minimal setup) in Germany for development
  - no spare boards existing at KEK for whole phase 3!

# Preparation at KEK

- Before Phase 3, DAQ system with ONSEN needs to be established for clean room installation. Two possible solutions:
  1. use racks in B4, close to VXD  
or
  2. use existing racks in E-Hut
    - needs temporary long optical cables (needs to be discussed w/ KEK people)
    - are there still cables, used last time ??
- Setting up the full ONSEN system will not take long (maybe by myself)
- Remote support should be sufficient until phase 3

# ONSEN support at KEK

- from 08/2018 to 12/2018: remote support  
(only support at KEK, if problems and ONSSEN commissioning)
- from 01/2019 to 03/2019: phase 3 support planned at KEK  
(part of JENNIFER, but not fixed yet)
- after 04/2019: only remote support  
(end of JENNIFER)

# Cluster Format

- Purpose:
  - **cluster rescue for high  $dE/dx$**  (slow pions)
    - $dE/dx$  information needs to be discussed (how to handle by ONSEN)
- Reminder: DHE will overwrite all DHP data!
- No data load reduction (see Talk by Andrey Jan. DESY)
- ONSEN recommendation:
  - activate CF *not* unless stable data taking w/ hit-based format @ 30kHz
  - at low rate, write out *both* data formats for verification