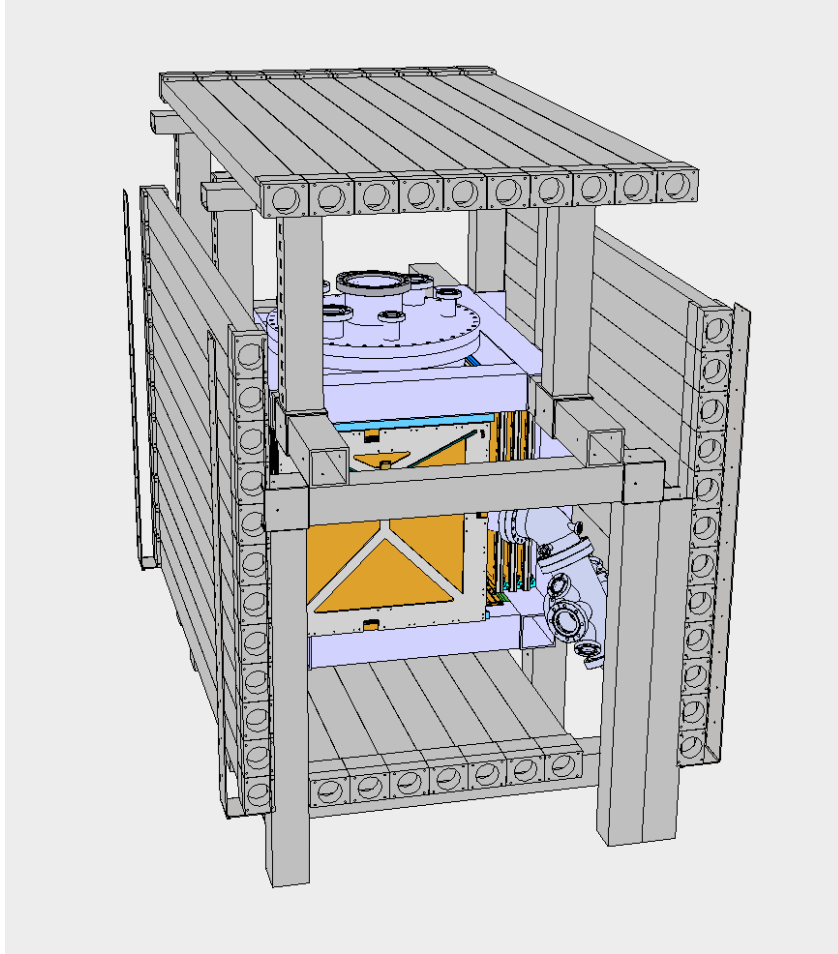


# **20170308 STATUS REPORT**

Ahram lee

# TOF Detector Preparation



A wall of TOF detector is planned to deliver to CERN until this summer.

To construct a wall,  
about 12 plastic bars will be needed.

24 PMTs

3 FADC Modules

\* Since free-fall chamber size is not decided yet,  
the number of bars is changeable.

In SNU,

we have 46 plastic bars (170cm)

53 PMTs (H7195)

2 FADC Modules (8ch).

# TOF Detector Preparation

1 FADC & 6 PMTs from IBS(170306)



## FADC500-IBS(old)

- ` FADC + TDC
- ` LEMO connector



## NKFADC500(new)

- ` FADC only
- ` SMA connector
- ` cannot use same readout program

One additional FADC(NKFADC500) and TCB board will be delivered on June.  
(near CERN delivery)

# TOF Detector Preparation

1 FADC & 6 PMTs from IBS(170306)



6 PMTs are all labeled.  
IBS015 ~ IBS020

$88 - 53 = 35$  PMTs will be delivered on January, 2018.

# TOF Detector Preparation

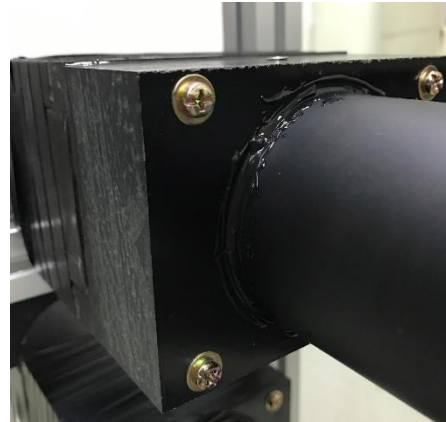
## Process and Plan

Shielding  
with Al foil & Black sheet



(Aluminum foil) x2 + (Black sheet)  $\approx$  1 mm  
 $\sim$  0.02mm  $\sim$  0.2mm

Attaching PMTs  
using Bakelite guides



Cosmic ray TEST

PMT gain  
time-resolution



Delivery to CERN

# TOF Detector Preparation

## Progress and Plan

Shielding  
with Al foil & Black sheet →



(Aluminum foil) x2 + (Black sheet)  $\approx$  1 mm  
 $\sim$  0.02mm  $\sim$  0.2mm

Now, 12 bars are shielded.

Instead of Aluminum foil(easily scratched),

Myler – Jparc

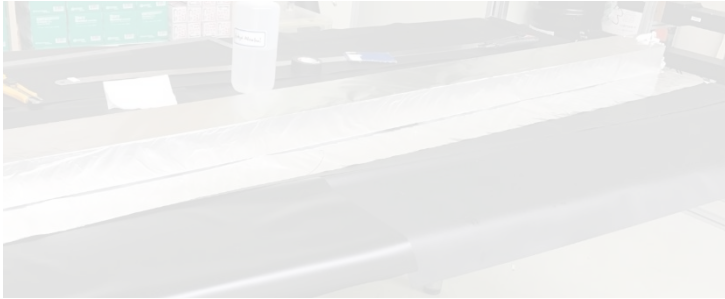
Tyvek – IBS



# TOF Detector Preparation

## Progress and Plan

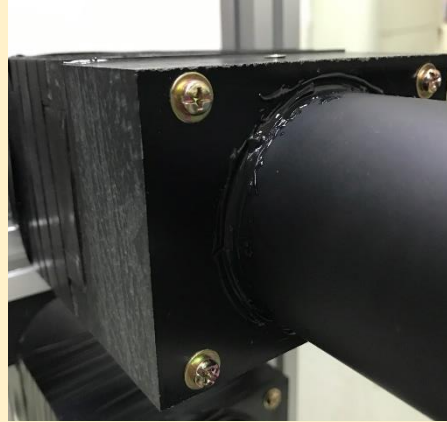
Shielding  
with Al foil & Black sheet



(Aluminum foil) x2 + (Black sheet)  $\approx$  1 mm  
 $\sim$  0.02mm  $\sim$  0.2mm

Confirmed that transport bolt has  
Light leak

Attaching PMTs  
using Bakelite guides



Bakelite will be delivered  
within next week.

Cosmic ray TEST

PMT gain  
time-resolution

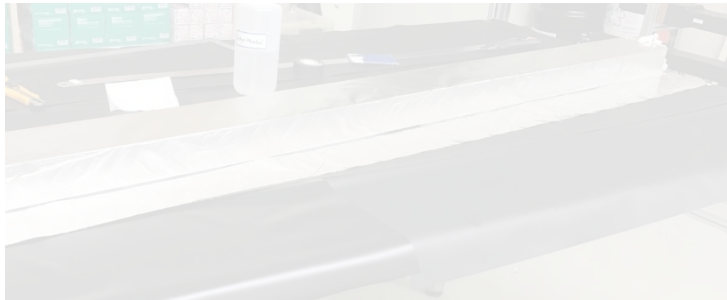
Delivery to CERN

Then, 3 bars can be tested  
at once by using FADC(8ch).

# TOF Detector Preparation

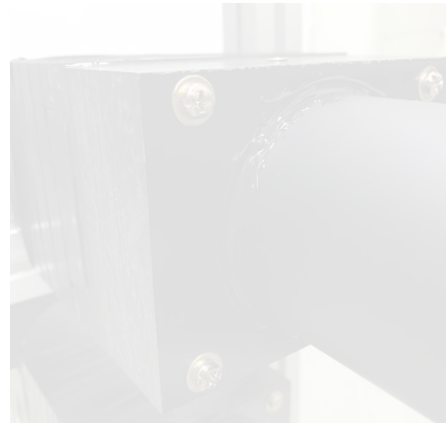
## Progress and Plan

Shielding  
with Al foil & Black sheet



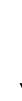
(Aluminum foil) x2 + (Black sheet)  $\approx$  1 mm  
 $\sim$  0.02mm  $\sim$  0.2mm

Attaching PMTs  
using Bakelite guides



Cosmic ray TEST

PMT gain  
time-resolution



Delivery to CERN

CERN Safety : got e-mail from Jean-Yves.  
Halogen free cable : ... Searching ...



# TOF Detector Preparation

## Progress and Plan

3월							4월						
일	월	화	수	목	금	토	일	월	화	수	목	금	토
			1	2	3	4							1
5	6	7	8	9	10	11	2	3	4	5	6	7	8
12	13	14	15	16	17	18	9	10	11	12	13	14	15
19	20	21	22	23	24	25	16	17	18	19	20	21	22
26	27	28	29	30	31		23	24	25	26	27	28	29
							30						



Mylar(Tyvek?) test



Attaching PMTs to plastic bars with guides



At center, 3bars + 2triggers coincidence data taking

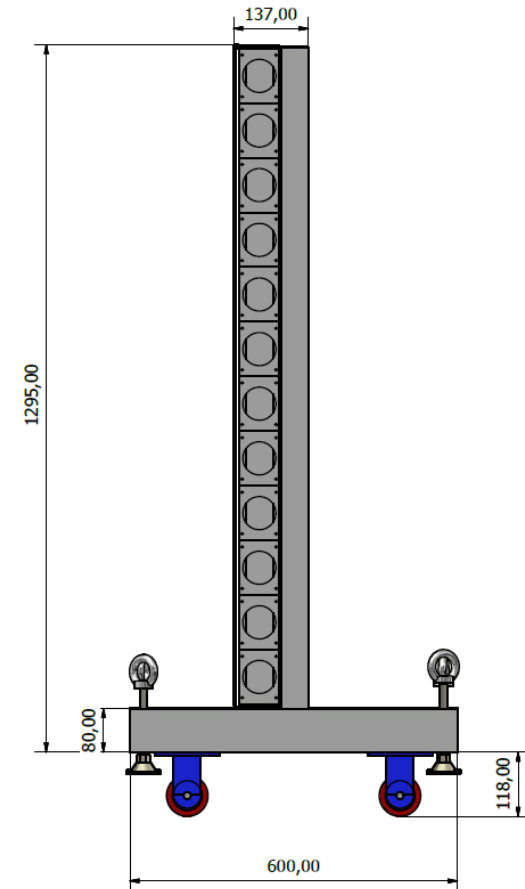


Test might be finished  
near mid-April.

# TOF Detector Preparation

## Questions

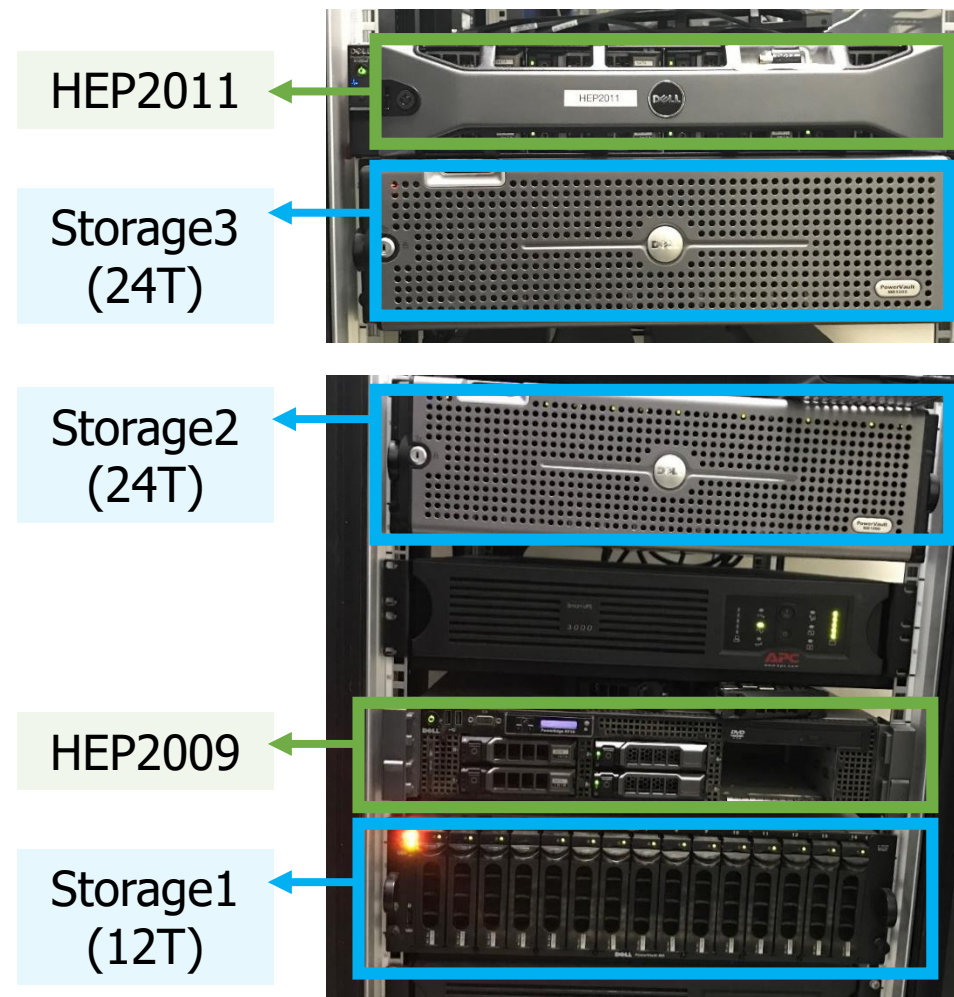
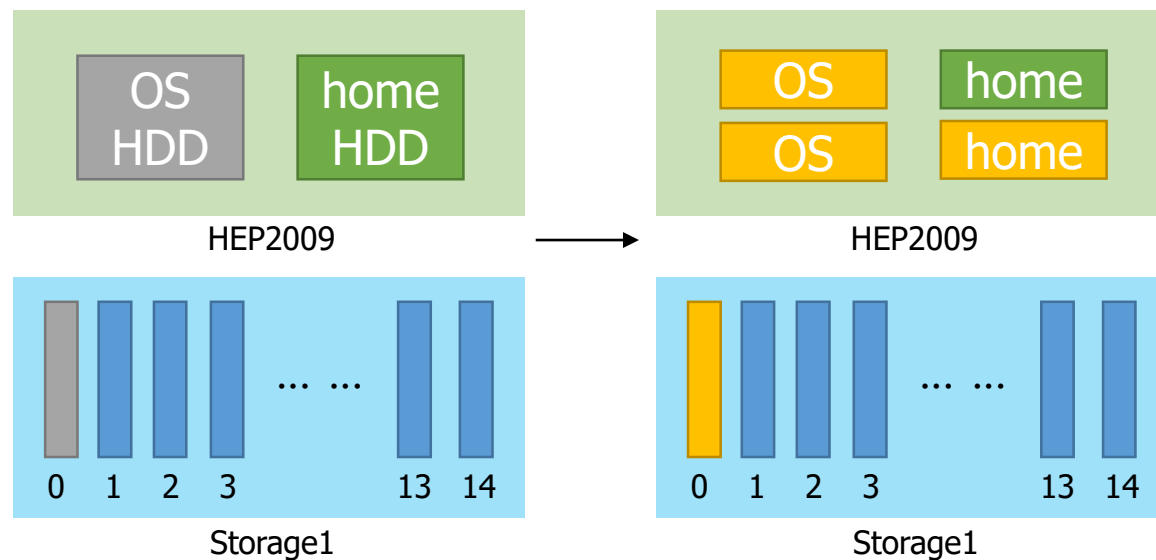
1. Reason for using FADC, not TDC + ADC ?
2.  $1 * \text{FADC500-IBS} + 3 * \text{NKFADC500} + 7 * (\text{FADC})$  ?
3. DAQ PC ? Where save data ?
4. DAQ system ?
5. TOF support



# HEP2009 Down

On 170217, 1 HDD of Storage 1 and 1 HDD of HEP2009 died.

Our first plan was to change them,  
and make mirror RAID with 4 \* 1TB HDD.



# HEP2009 Down

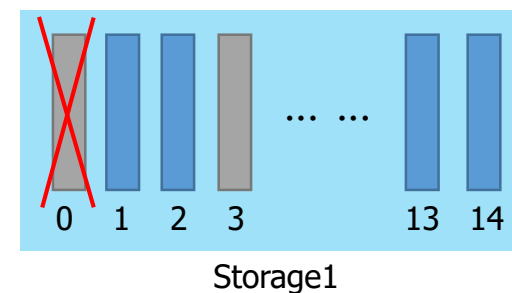
## Storage1 Problem

After changing 0<sup>th</sup> HDD, it keeps rebuilding it.  
It might result from a slot, not a disk. (should be tested)

Moreover, 3<sup>rd</sup> HDD died.

Since it is RAID 6, it can continue to execute read and write in the presence of any **two** concurrent disk failures.

Therefore, if one more HDD died ...



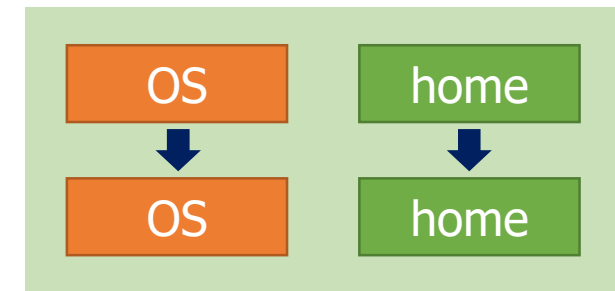
# HEP2009 Down

## Hep2009 Problem – internal controller

Disk mirroring : the replication of logical disk volumes onto separate physical hard disks in real time to ensure continuous availability

After disk mirroring,  
home RAID works, but OS RAID doesn't.  
Though OS(CentOs 6.7) is successfully installed,  
OS booting keeps failed.

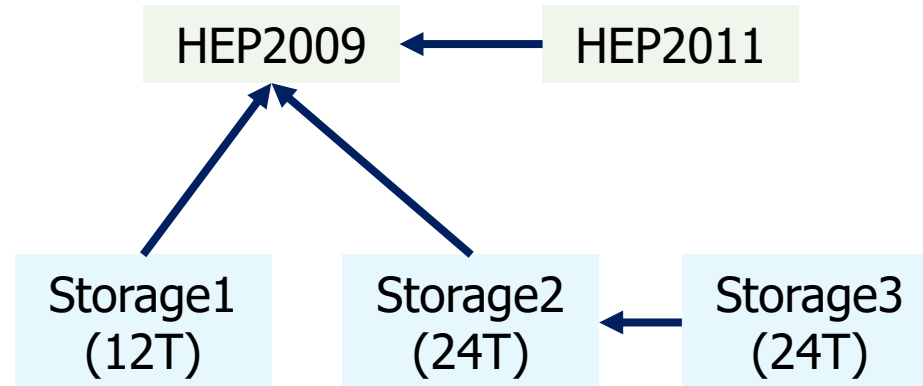
Without RAID(mirroring), OS is booted well.



Planned HEP2009

# HEP2009 Down

## Hep2009 Problem – external controller

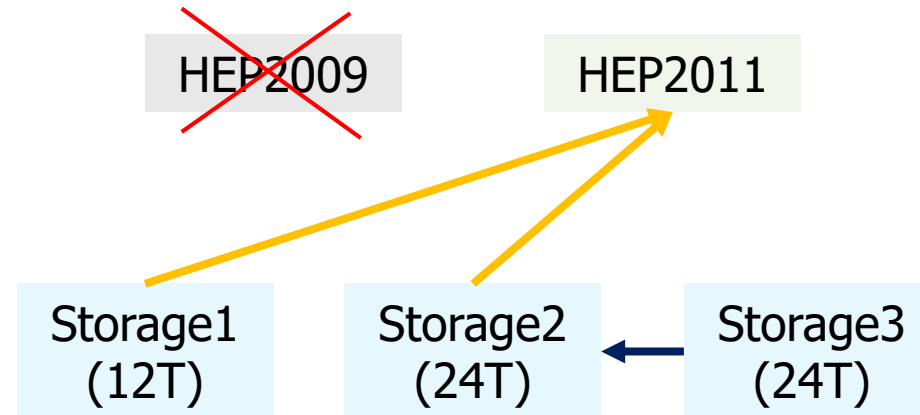


Storages and Hep2011 have been mounted on Hep2009.  
But, everytime we try to backup(cp), for instance Storage1 to Storage2, or 3,  
They give us 'Input/Output error' – which is related with hardware.  
Also, Storage 1 and 2 keep 'Initializing' – still don't know what it means(format?)

By using Hep2009, we cannot backup storages. (if lucky, it can be accessed for a short time)

# HEP2009 Down

## Hep2009 Problem – version



Assign Hep2011 to a main server?

The external controller in Hep2009 and storages are all ver.6. (No external card in Hep2011)  
However, nowadays, it is ver.13.

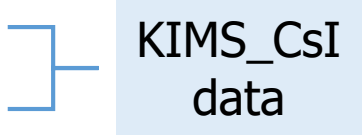
Ver. 6 controller is not available to buy .....

# HEP2009 Down

## Data in Storages

```
[root@hep2009 /]# df -h
df: `/media/CENTOS 7 X8': Input/output error
```

Filesystem	Size	Used	Avail	Use%	Mounted on		
/dev/sda3	855G	5.4G	806G	1%	/		
tmpfs	3.9G	224K	3.9G	1%	/dev/shm		
/dev/sda1	488M	40M	423M	9%	/boot		
/dev/sdc1	917G	664G	206G	77%	/home		
/dev/sdg1	24T	12T	12T	50%	/data3	→	Storage3
/dev/sdf1	24T	21T	3.4T	86%	/data2	→	Storage2
/dev/sde1	12T	2.3T	9.6T	19%	/data1	→	Storage1
/dev/sdb1	917G	72M	871G	1%	/media/6f3a50f5-...		



→ Storage3  
→ Storage2  
→ Storage1

KIMS\_CsI  
data



# HEP2009 Down

## Data in Storages

### Storage1(data1)

total 8.0K

drwxr-xr-x. 3	515(kwkim)	users	17	Dec 16 2013	CsI_strg
drwxr-xr-x. 5	526(jilee)	users	4.0K	Dec 30 2011	jilee
drwxr-xr-x. 2	root	root	4.0K	Feb 22 00:34	jkleee
drwxr-xr-x. 4	506(wgkang)	users	34	Nov 14 2013	kims+nai
drwxr-xr-x. 3	515(kwkim)	users	21	Dec 7 2013	ntpdata
drwxr-xr-x. 4	515(kwkim)	users	35	Jan 7 2011	S35_data
drwxrwxr-x. 8	515(kwkim)	users	73	Jun 27 2012	ssmyung

npt data(15T) : /data1/CsI\_strg/DATA/SET14 ~ SET21

not in CUP cluster

# HEP2009 Down

## Data in Storages

### Storage2(data2)

drwxrwxr-x. 7	root	users	76	Oct 29 2010	CsI_strg
drwxrwxr-x. 3	root	users	20	Mar 28 2013	Env_strg
drwxrwxr-x. 6	root	users	65	Aug 10 2010	Neutron_strg

raw data(9T) : /data2/CsI\_strg/RAWDATA/SET14 ~ SET22

SET22 : #100(09/09/09) ~ 9365(12/03/24)

not in CUP cluster

ntp data(5.6T) : /data2/CsI\_strg/DATA/SET22 #50(09/09/04) ~ 9460(12/04/03)

calibration files(2011,2012), lowE skim files

ntuple\_sadc\_alpha #50 ~ 9110 ,rmt10, sep

backup in CUP cluster

### Storage3(data3)

belle\_data data1 LIBRA strg1 test