KJCC system and Correlation status

Se-Jin Oh

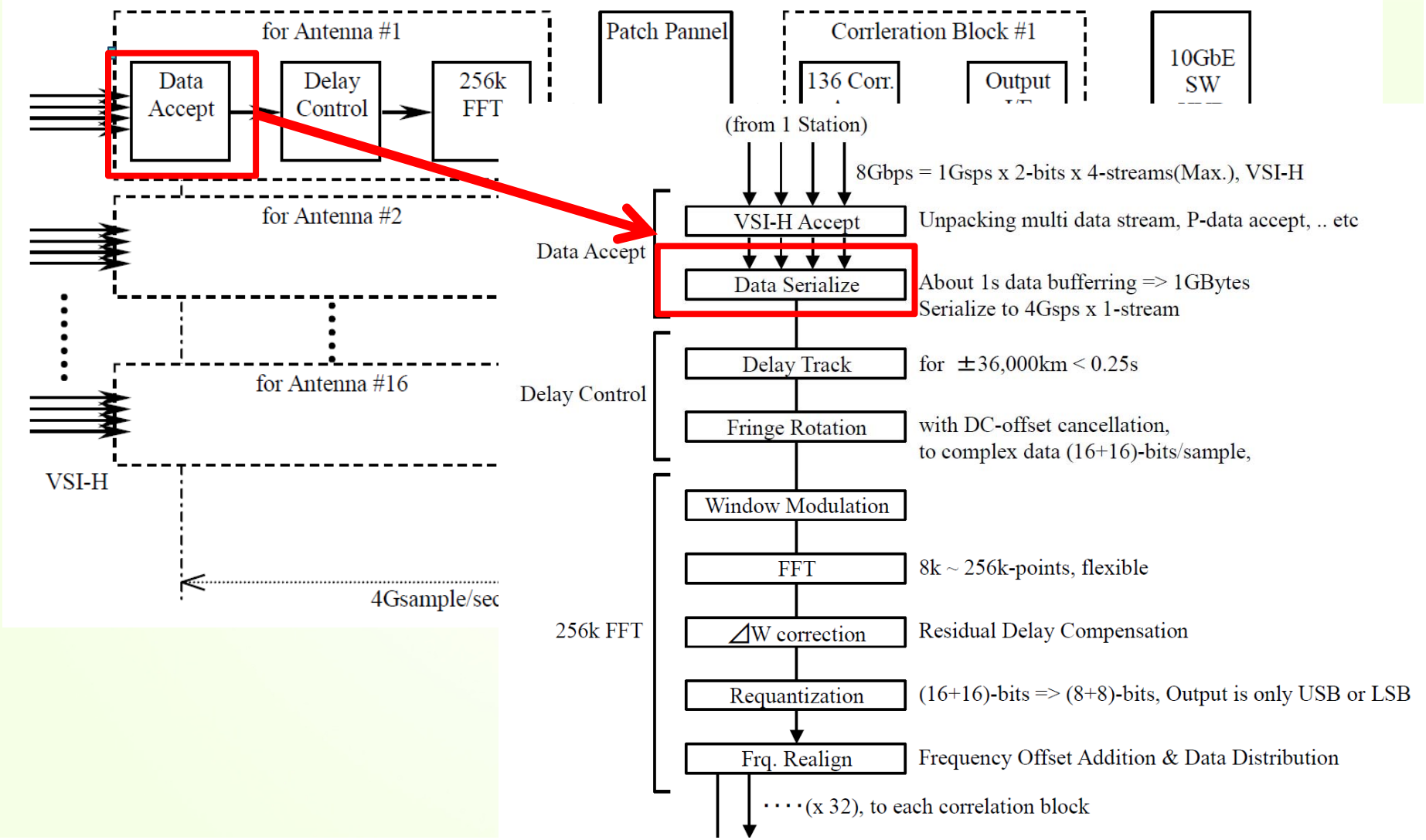
and staff of Correlator team of KASI/NAOJ

VERA User's Meeting, 24~25 Sept. 2015, @ Mizusawa, Japan

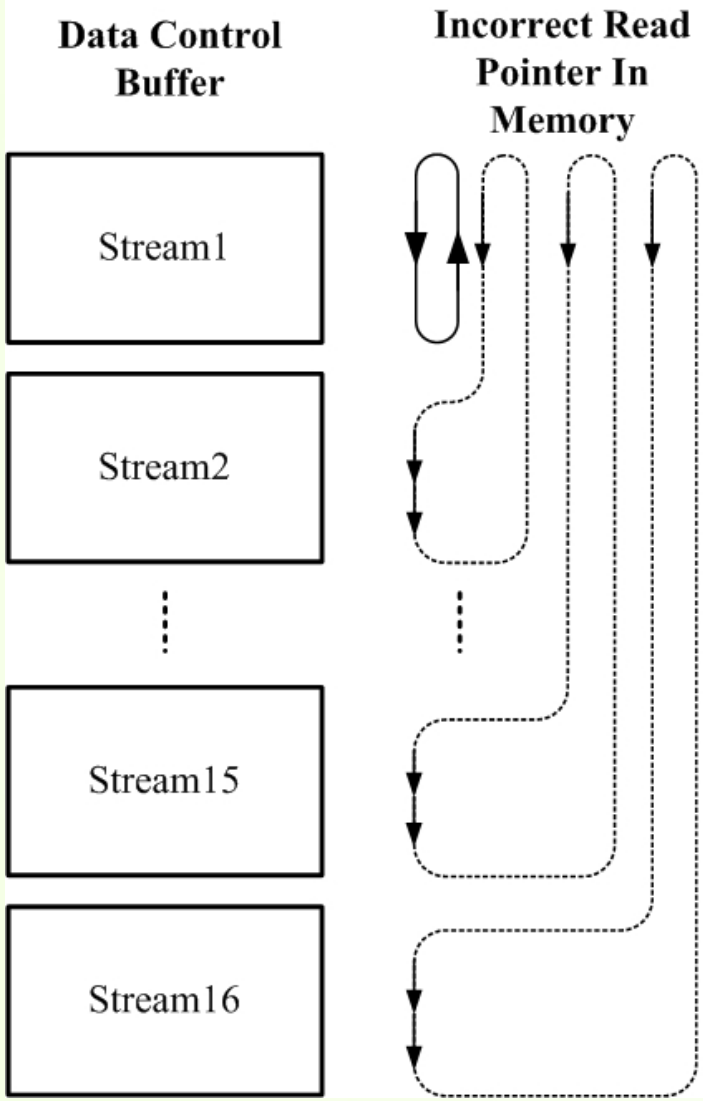
Contents

- **KJCC system status**
  - Problem(known, like~) and others
  - Maintenance
- **Correlation Status**
- **Recent Activities**
- **Future Work**

2-layer Problem in VCS

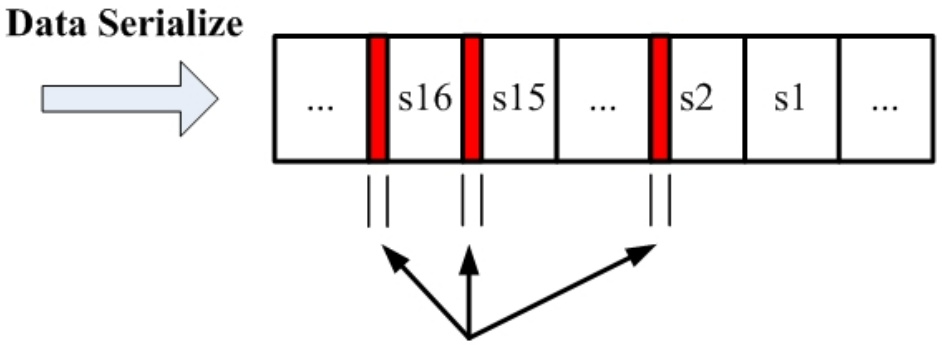


Incorrect Read pointer in Memory map



In incorrect case, first stream1 is correctly read, but the other streams read stream1 data from memory.

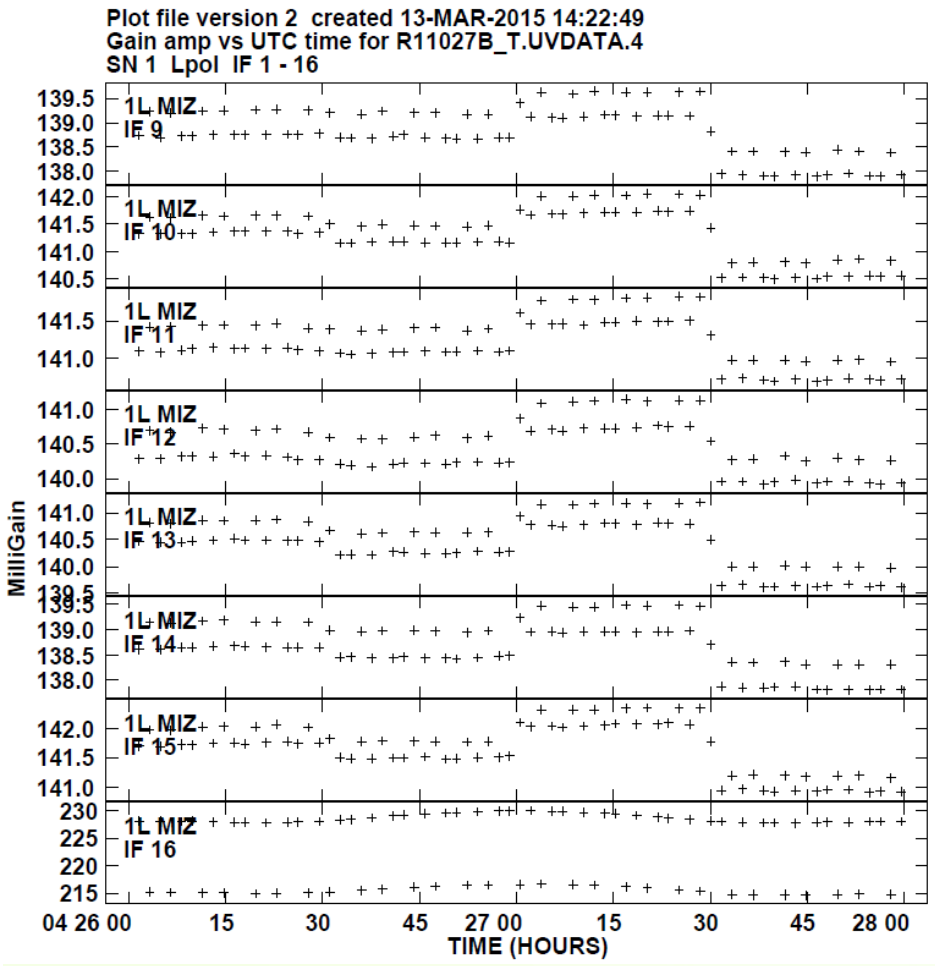
➔ Coding miss in FPGA



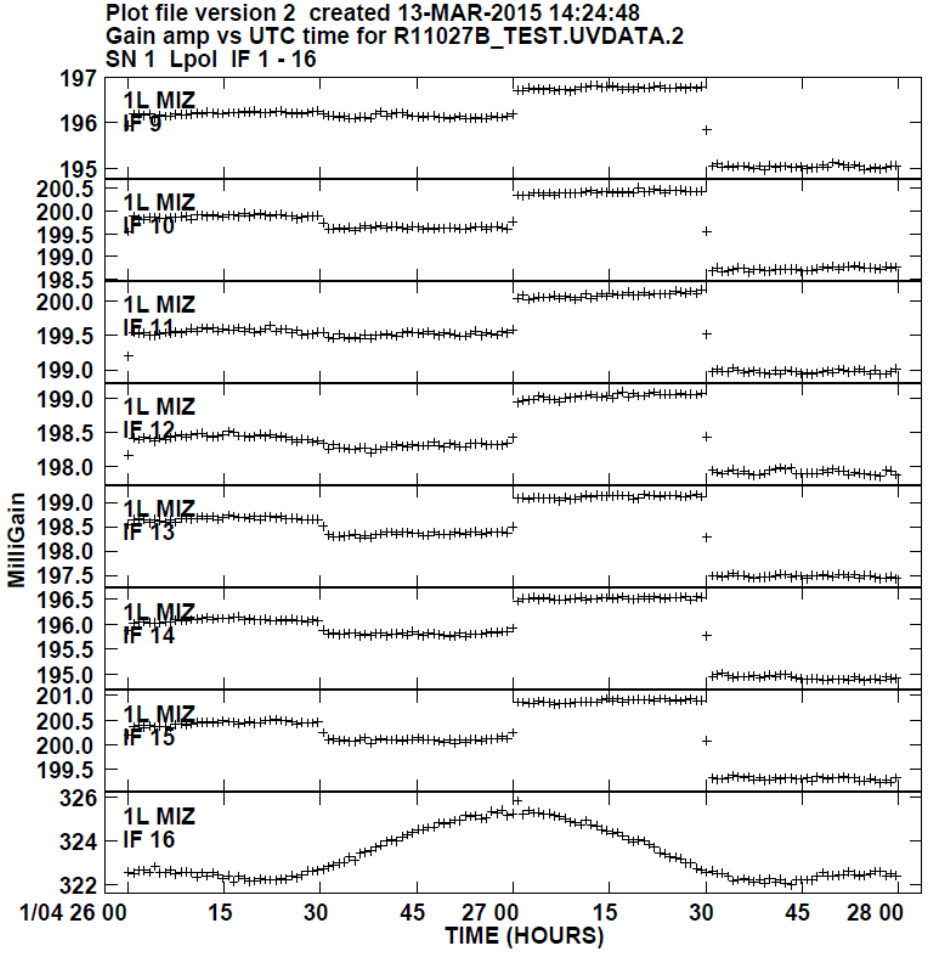
At the end point of memory, Read pointer becomes Stream1, then the serialized data outputs Stream1 data. This figure shows incorrect Read pointer behavior of memory.

Test Result(Before, After)

Before

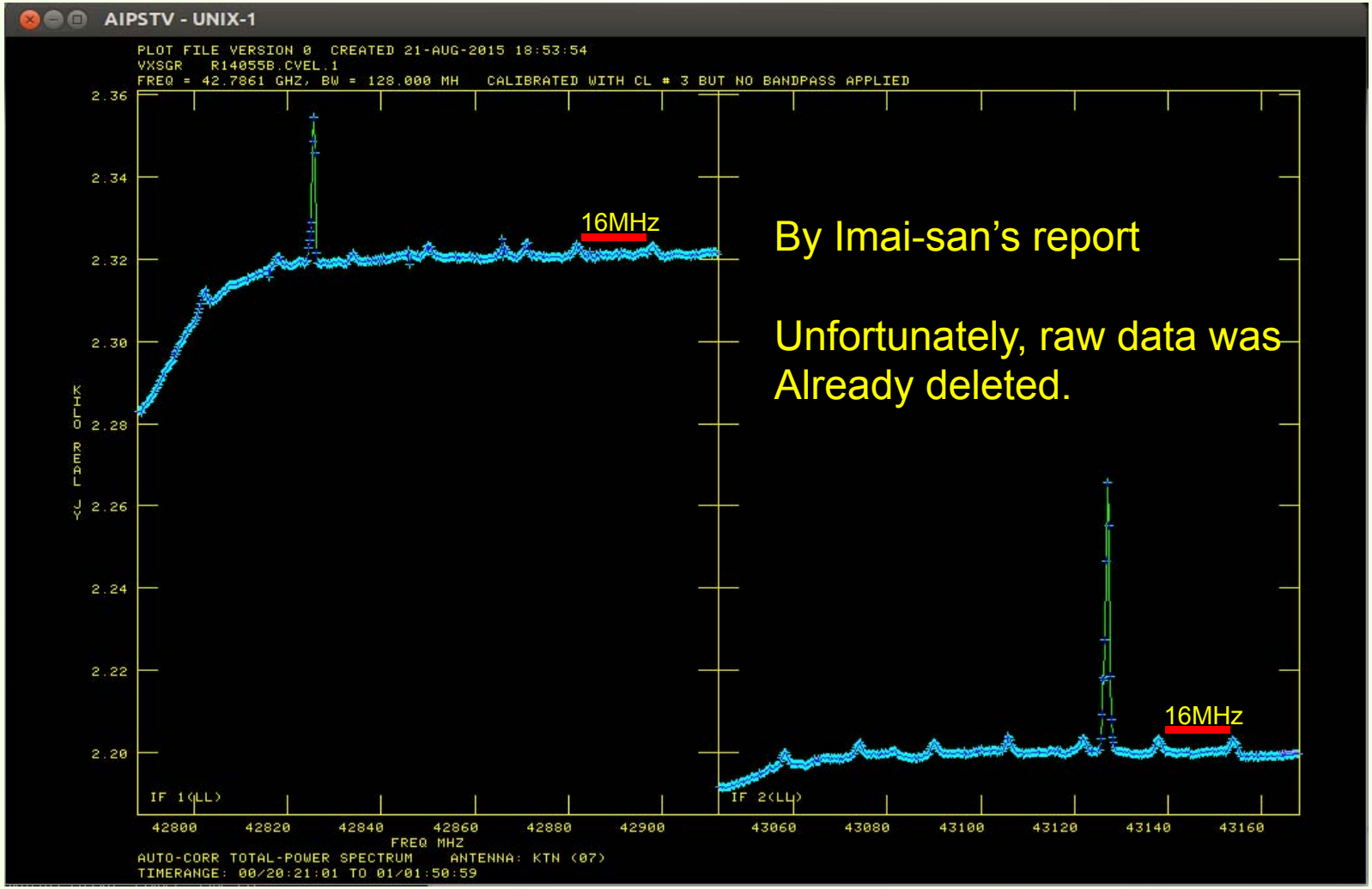


After



한국천문연구원
Korea Astronomy & Space Science Institute

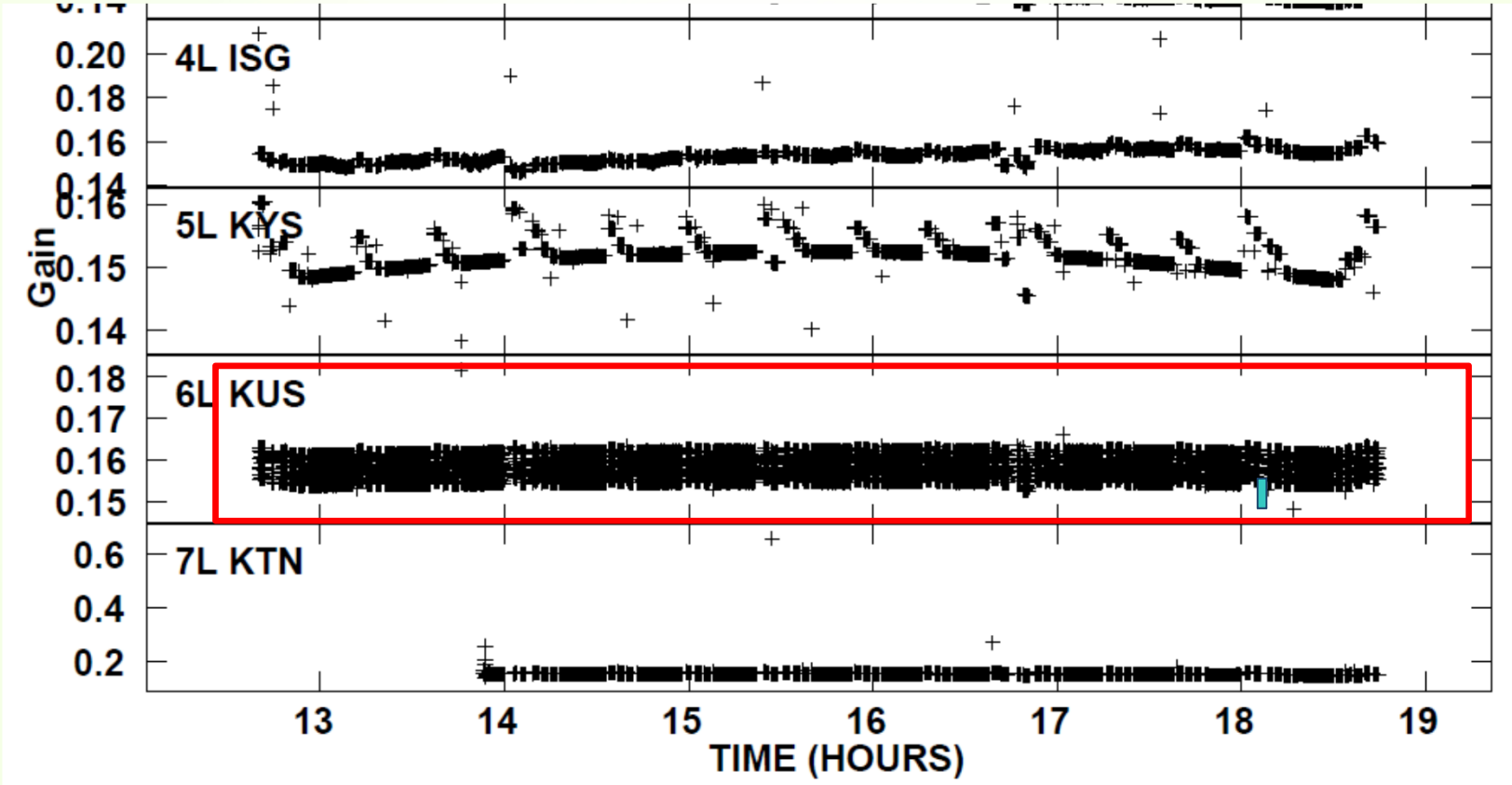
CORR or Sampler Spurious ?



한국천문연구원
Korea Astronomy & Space Science Institute

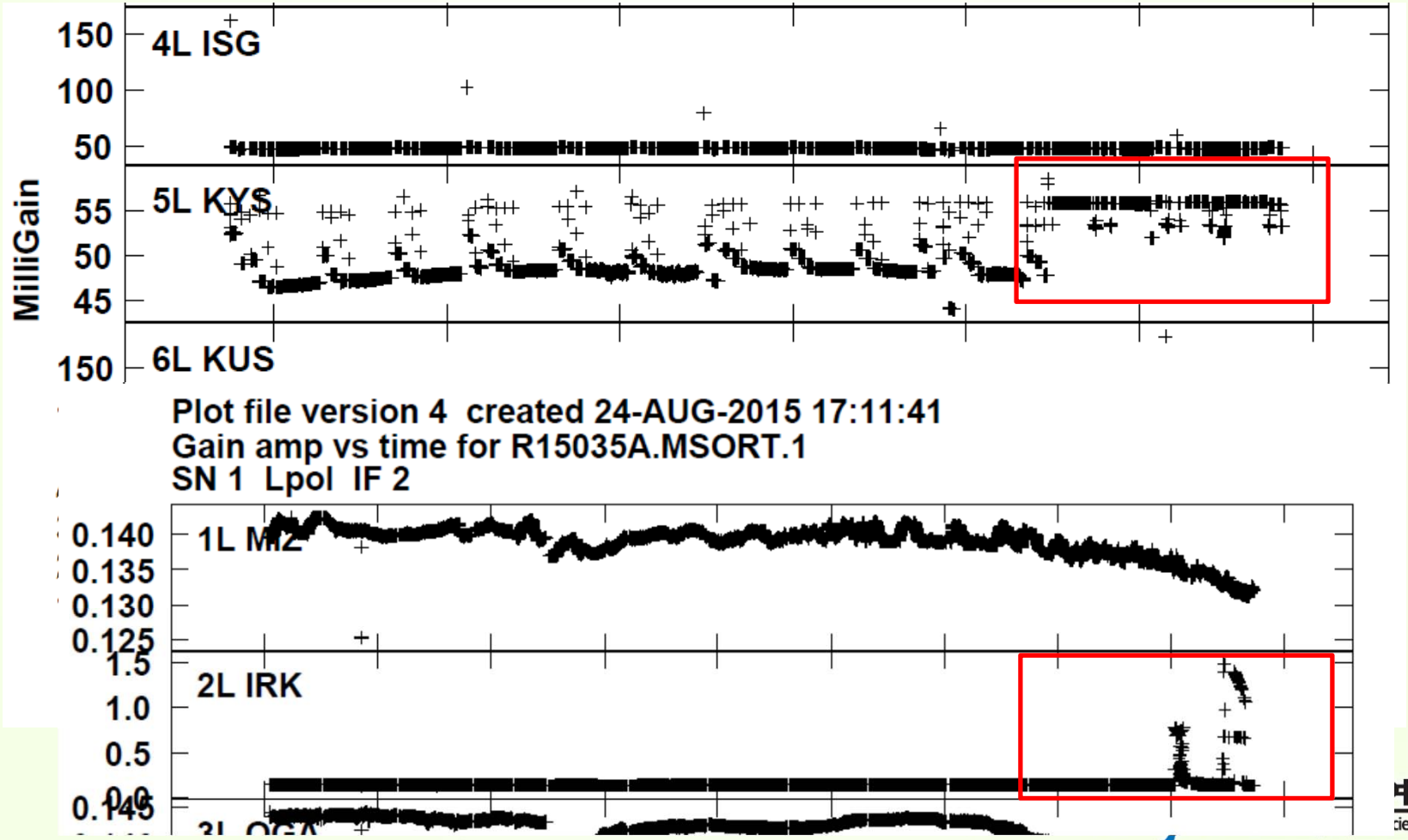
Sometimes 2-layer (old HDD error)

- HDD used in RVDB OCTADDB had speed access error due to old or its performance



RVDB dummy data

- In SNPLT task, you can see strange feature for this reason. This feature is dummy(previous obs data) data in RVDB.



VCS maintenance

- **With Elecs Industry Co. Ltd. Including RVDB**
- **Period : 2015. 9/13~9/19**
- **Check list**
  - AU, CAU checking
    - Cleaning, Fan unit, Power unit, Optical output level check for each AU/CAU
    - VCS inside interface check, CAU#10 check
    - AU#10 – by changing optical module, it is repaired.
    - AU#3, #12 - QDR Memory Error (→ needs to be sent to Factory)
    - FG + Surge protector
  - RVDB (DIO,DDB) : firmware update
  - Test run

Correlation Status in KJCC web

KJCC Korea-Japan Correlation Center

http://kjcc.kasi.re.kr

KJCC | Correlation | Database | Contact Us

Season	#Observation	Corr Finished	Remain Corr	Remark	Update
KaVA 2015B	8	1	7	0	2015.09.11

Finished | Doing | Not yet | Suspend | KJCC evaluation | Not related in KJCC

Please click the observation code for more detail procedure!!

Observation Date	Observation Code	PI & SWG	Frequency Band	Corr Mode	Objective	Media POS	Copy Status	Fringe Detection	Correlation Status	FITS release Date
2015.09.02 (15245b)	k15ns01d	N. Sakai/GA	K	GEO1S(C5)	KaVA Astrometry for W3OH	KJC	NY	NY	1:15...	NY
2015.09.02 (15245a)	k15mk01g	M. Kino/AGN	Q	VERA7SIOS (C5)	KaVA AGNWG Sgr A* Q-Band Monitoring (150902)	KJC	NY	NY	1:15...	NY
2015.09.01 (15244b)	k15hy01b	Hyemin Yoo/AGN	Q	GEO1S(C5)	KaVA HFP	KJC	NY	NY	1:15...	NY
2015.09.01 (15244a)	k15mk04a	M. Kino/AGN	K	GEO1S(C5)	KaVA Observation of PKS1510 at K-band	KJC	NY	NY	1:15...	NY
2015.08.31 (15243a)	k15hy01a	Hyemin Yoo/AGN	K	GEO1S(C5)	KaVA HFP	KJC	KVN Done	NY	1:15...	NY
2015.08.30 (15242k)	r15242k	T. Jike	K	GEO1K(C5)	GeodeticExperiment	KJC	NY	NY	1:15...	NY
2015.08.19 (15231a)	k15mk03a	M. Kino/AGN	Q	GEO1S(C5)	KaVA Observation of 3C84 at Q-band	KJC	KVN Done	All	Finished (15.09.09)	1:2015.09.17
2015.08.18 (15230a)	k15ns01c	N. Sakai/GA	K	GEO1S(C5)	KaVA Astrometry for W3OH	KJC	KVN Done	All	15.09.)	NY

KJCC (Korea - Japan Correlation Center)

국천문연구원
stronomy & Space Science Institute

Correlation Status

Season	Observation	Corr Finished	Remain Corr	FITS release
2015B	8	1	7	1
2015A	42	42	0	42
2014B	30	30	0	30
2014A	56	56	0	56

The correlation is now conducted normally.

KASI 한국천문연구원 Korea Astronomy & Space Science Institute

Average Correlation Time

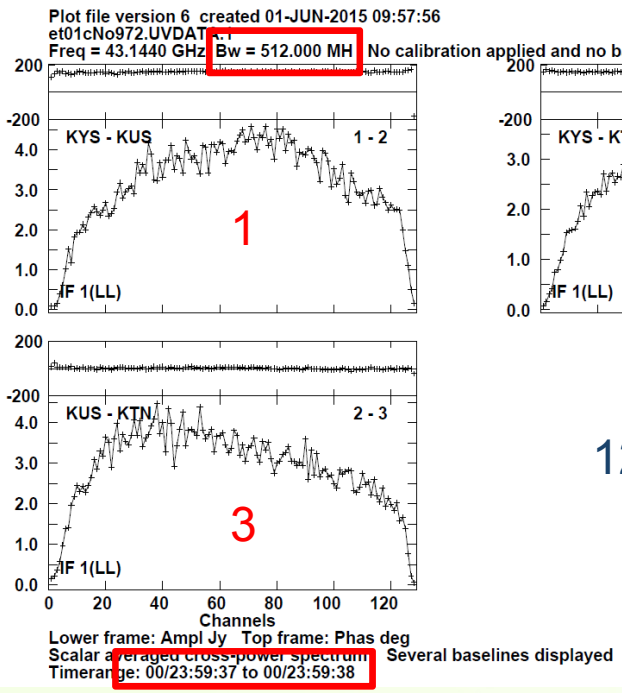
- **Media delivery time**
  - KJCC to each VERA site, it took 4 or 5 days
  - Each VERA site to KJCC, it took almost 2 weeks or 16 days due to Korean Customs
- **Media staying time in KJCC**
  - OCTADISK pack is staying in KJCC average 40days or longer. VERA AOC often requested to us more fast returning due to lack of media. Sometimes VERA used their own diskpack for KaVA obs.
- **Average correlation time**
  - 1 correlation per day is general. Sometimes 2 correlations are conducted.

KASI 한국천문연구원 Korea Astronomy & Space Science Institute

2Gbps test correlation

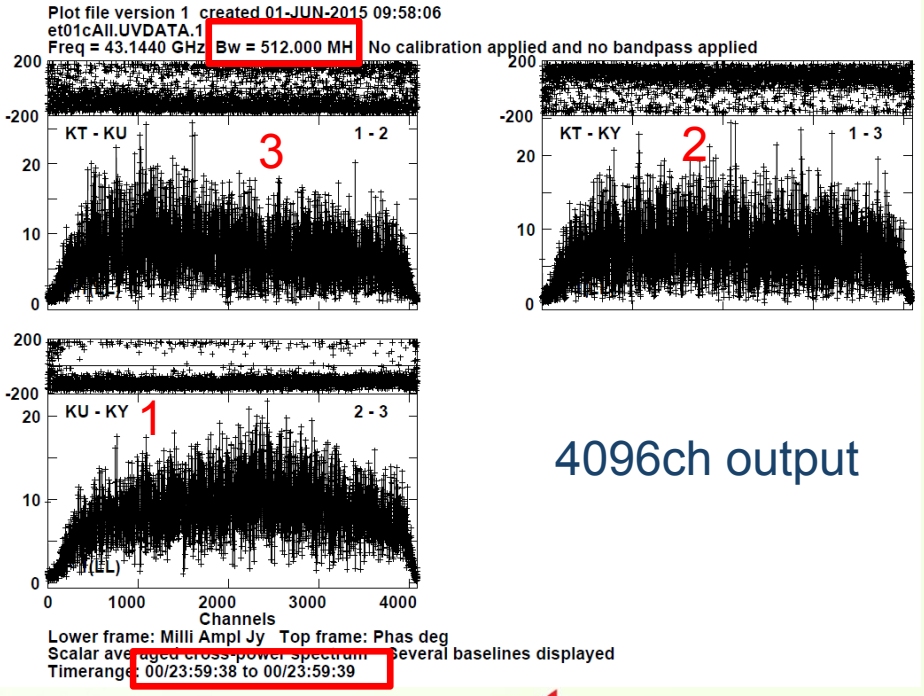
- 512MHz BW x 1 IF
- KVN only test observation
- 2Gbps test observation will be regularly performed

KJCC



128ch output

DiFX



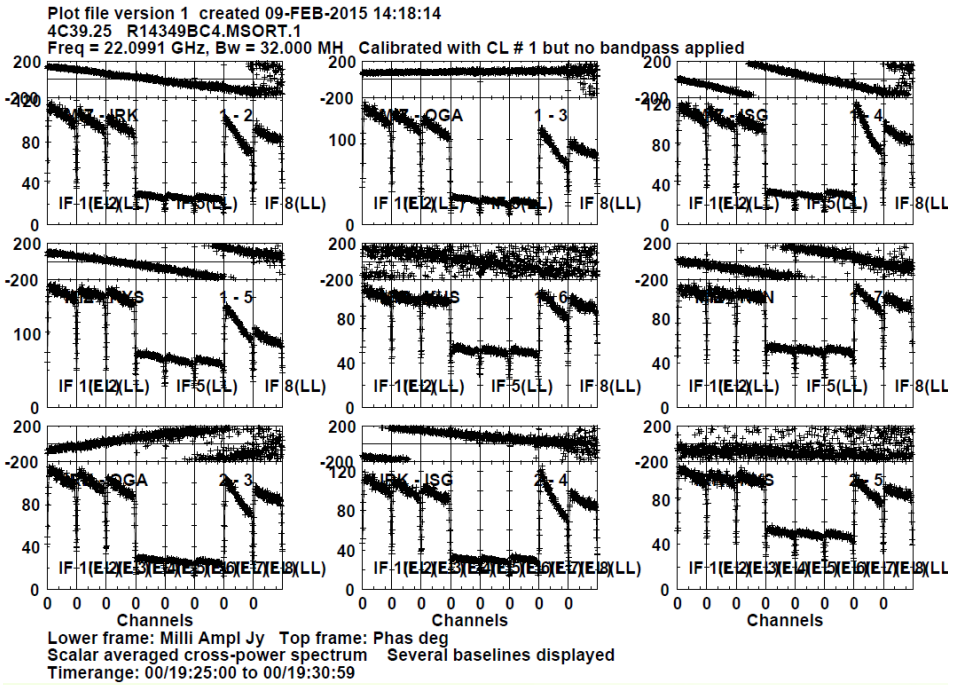
4096ch output

한국천문연구원
Korea Astronomy & Space Science Institute

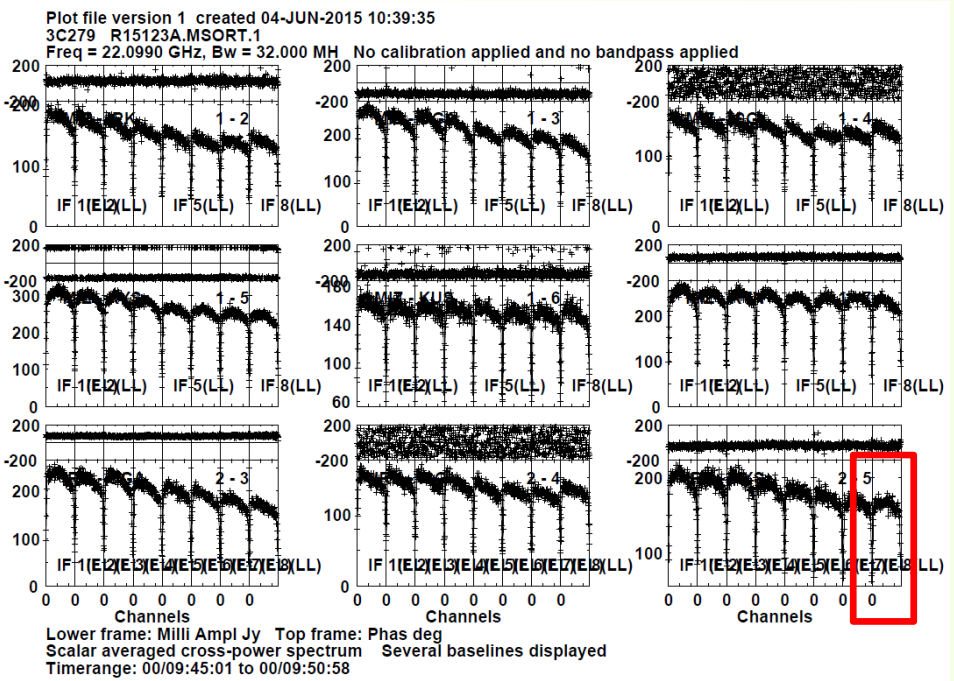
C4 mode

- 32MHz BW x 8IFs
- 2014 vs. 2015
- Digital Filter setting is fixed
- Expected normal operation in 2016A

2014



2015



KASI 한국전문연구원 Korea Astronomy & Space Science Institute

Request from KJCC

- **Short description**
  - Some observations are quite complicated to understand.
  - If you want to receive FITS file correctly as you expected, please let us know your short description of correlation scheme.
- **Data keeping request**
  - We would like to keep all observation data over 2months, but diskpacks are sometimes released due to lack of media.
  - If you want to keep observation data, please ask us your request within 2weeks after FITS distribution.
  - We will discuss purchase of media in Director's Meeting.
- **Diskpack for KaVA**
  - Each KVN/VERA should consider for buying disk-pack in order to operate steadily.
  - If possible, each PI have interest for buying disks.

Episode @ KJCC

- Re-correlation is requested including data copy again and again
- PIs firstly suspected that Correlation have wrong or problem. But sometimes correlation processing is wrong due to set of wrong parameter or data copy problem. But many of observation were also conducted with error or not. In AOC report, NO PROBLEM is written, but it is not always correct.
- Correlator team is encouraged with your short message in presentation for this obs correlated by KJCC efforts.

Future Work

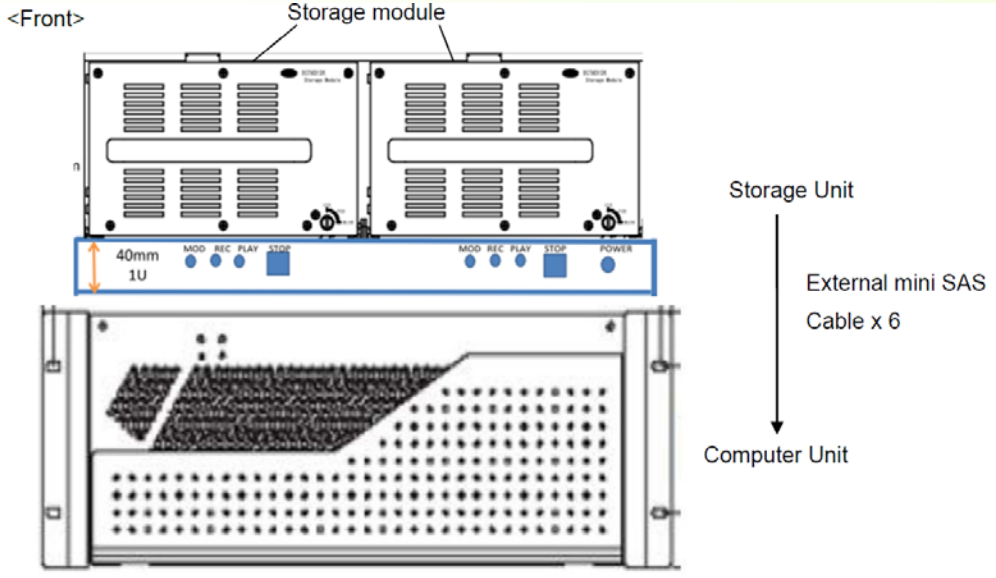
- 4/8Gbps test correlation
- CODA/FITS generation SW modification for Fast switching (already started)
- New Data Archive for Correlator output saving in 2016
- Support fully Geodesy correlation and Astrometry correlation with in close cooperation with VERA team

2/4/8Gbps playback support

- Support playback of Mark6(KVN)/OCTADISK2(VERA) to Daejeon Corr at KJCC

Mark6

OCTADISK2



- VDIF data transfer SW developed(Big Storage Server(Mark6 or others) to RVDB)

KASI 한국천문연구원 Korea Astronomy & Space Science Institute