LP test beam
Micromegas analysis

- Data flow, content and quality -

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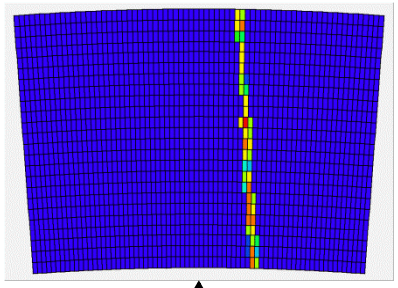
Data flow



T2K electronics
1728 channels

Optical
fibre

Back-end
electronic
(ML405)

TCP/IP via ethenet

PC
T2K DAQ
on Linux

1-hour automatic
rsync backup

500 Go — ILC_DATA_01
500 Go — ILC_BCKP_01
500 Go — ILC_DATA_02
500 Go — ILC_BCKP_02

1 To — Saclay

Grid

NativeToLCIO (Yun-Ha Shin)
Transfert done by K. Dehmelt

Data content summary

RUN	Date (2008)	Detector	Gas	Source	Content
1-79	July-Sept.	Standard Pads in gas box	Ø, …	Ø, ^{55}Fe	DAQ, routing test,
80-133	Sept.-Oct.	Standard Pads in gas box	P5	Cosmics	Electronic tuning
134-141	27-28 Oct.	Resistive Anode in gas box	P5	Cosmics	Electronic tuning
142-146	29-30 Oct.	Resistive Anode in gas box	T2K	Cosmics	Electronic tuning
146-181	21 Nov.	Standard Pads in LP1 [B=0]	T2K	Cosmics	Gas improvment, electronic test
182-188	22-24 Nov.	Resistive Anode in LP1 [B=0]	T2K	Cosmics	~ 165 000 events
189-217	25 Nov.	Resistive Anode in LP1 [B=0]	T2K	E_{e^-}=5 GeV + Cosmics	
218-281	28 Nov. – 8 Dec.	Resistive Anode in LP1 [B=0]	T2K	E_{e^-}=5 GeV	
322-469	8-15 Dec.	Resistive Anode in LP1 [B=1T]	T2K	E_{e^-}=5 GeV	Many z values, electronic shaping & frequencies, electric field ~ 1 200 000 events

Data content summary (B=1T)

Z_{beam} = 50 cm	Standard conditions*				Low drift conditions**			
	ZS (~10 000 evts)		No ZS (~3 000 evts)		ZS (~10 000 evts)		No ZS (~3 000 evts)	
peakingTime (ns)	Run	#event	Run	#event	Run	#event	Run	#event
100	312	10062	318	3264	326/434	6917/5000	429	3000
200	313	12954	317	3264	430	10000	428	3000
500	314	10142	319	3264	431	10000	427	3000
1000	315	11001	320	1908	432	10000	426	3000
2000	316	10512	424	3000	433	10000	425	3000

Z_{beam} = 30 cm	Standard conditions*				Low drift conditions**			
	ZS (~10 000 evts)		No ZS (~3 000 evts)		ZS (~10 000 evts)		No ZS (~3 000 evts)	
peakingTime (ns)	Run	#event	Run	#event	Run	#event	Run	#event
100	329	10000	338	3000	330	10000	352	3000
200	333	10000	339	3000	343	10000	351	3000
500	334	10000	340	3000	344	10000	350	3000
1000	335	10000	341	3000	345	10000	349	3000
2000	336	10000	342	3000	346	10000	348	3000

Z_{beam} = 20 cm	Standard conditions*				Low drift conditions**			
	ZS (~10 000 evts)		No ZS (~3 000 evts)		ZS (~10 000 evts)		No ZS (~3 000 evts)	
peakingTime (ns)	Run	#event	Run	#event	Run	#event	Run	#event
100	353	10000	362	3000	363	10000	372	3000
200	354	10000	361	3000	364	10000	371	3000
500	355	10000	360	3000	365	10000	370	3000
1000	356	10000	359	3000	366	10000	369	3000
2000	357	10000	358	3000	367	10000	368	3000

Z_{beam} = 40 cm	Standard conditions*				Low drift conditions**			
	ZS (~10 000 evts)		No ZS (~3 000 evts)		ZS (~10 000 evts)		No ZS (~3 000 evts)	
peakingTime (ns)	Run	#event	Run	#event	Run	#event	Run	#event
100	373	10000	380	3000	385	10000	394	run
200	374	10000	381	3000	386	10000	393	3000
500	377	10000	382	3000	387	10000	392	3000
1000	378	10000	383	3000	388	10000	391	3000
2000	379	10000	384	3000	389	10000	390	3000

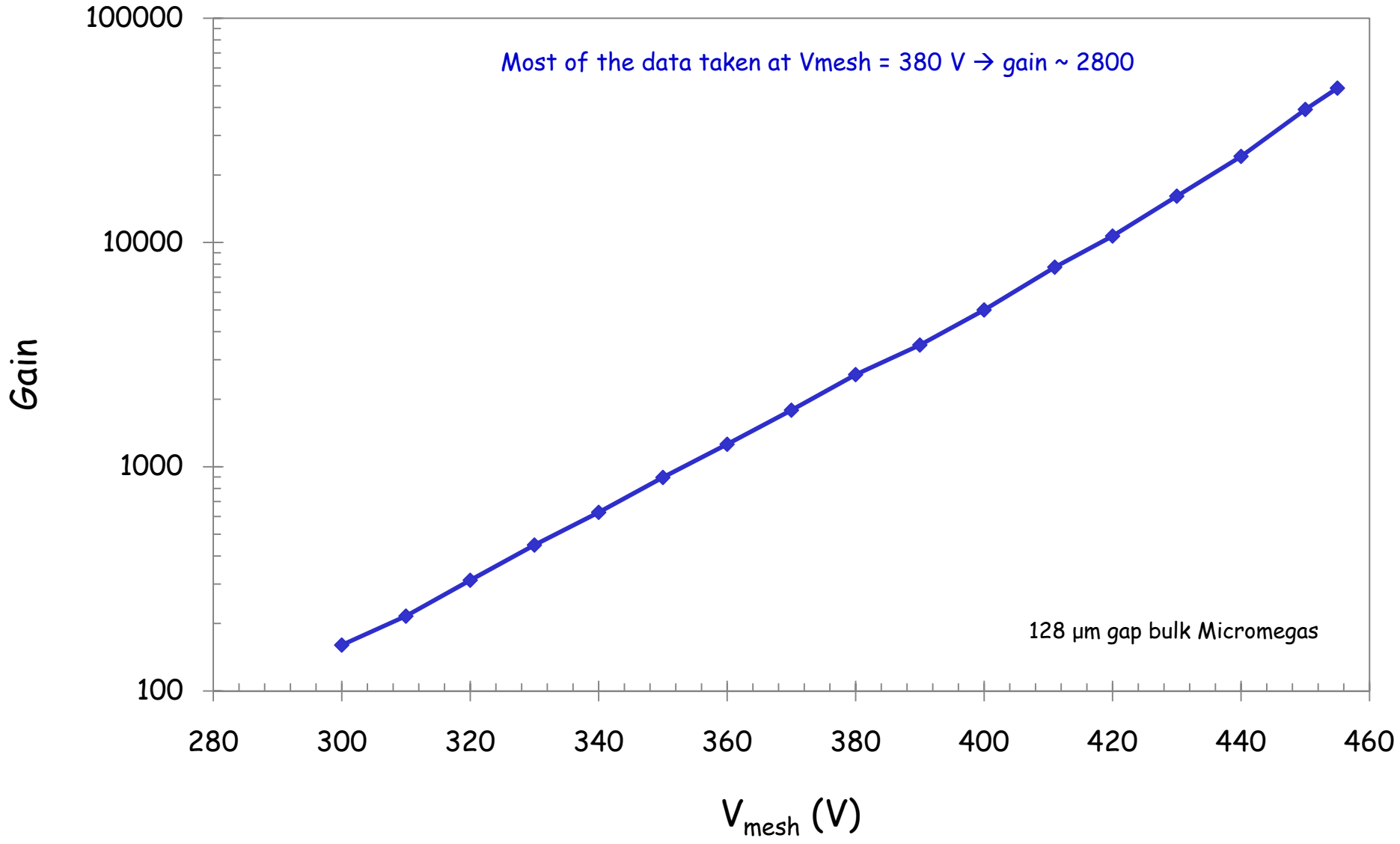
Z_{beam} = 10 cm	Standard conditions*				Low drift conditions**			
	ZS (~10 000 evts)		No ZS (~3 000 evts)		ZS (~10 000 evts)		No ZS (~3 000 evts)	
peakingTime (ns)	Run	#event	Run	#event	Run	#event	Run	#event
100	395	10000	406	3000	407	10000	416	3000
200	396	10000	405	3000	408	10000	415	3000
500	397	10000	402	3000	409	10000	414	3000
1000	398	10000	401	3000	410	10000	413	3000
2000	399	10000	400	3000	411	10000	412	3000

- B=OT data
- 25 sampling frequency

* Standard conditions: 230V/cm		
divideScaClockBy	0x4	
nClocksBeforeStop	0x780	
	V (V)	I (µA)
Mesh	380	0
Cathode	13470	64
7th Strip	397	8,1

** Low drift conditions: 140V/cm		
divideScaClockBy	0x4	
nClocksBeforeStop	0x780	
	V (V)	I (µA)
Mesh	380	0
Cathode	8351	39
7th Strip	390	31,9

Bulk Micromegas gain in T2K gas



Data content summary

- Total number of events: ~5×10^6
- Data taken for z=10 cm at several sampling frequencies: 10, 25, 33, 50 & 100 MHz
- Most of data taken for alignment, electronic tests and parameters tuning are for specialists
- Electronic logbook available at: `https://ttfinfo.desy.de/LP1elog`
- LCIO data available on the grid accessible within the VO 'ilc' at:

```
lfn:/grid/ilc/tpc/2008/t24/micromegas/LCIO/*.slcio
(srm://dcache-se-desy.desy.de/pnfs/desy.de/ilc/tpc/2008/t24/micromegas/LCIO/*.slcio)
```

How to access to the data

Here you have some very helpful web links:

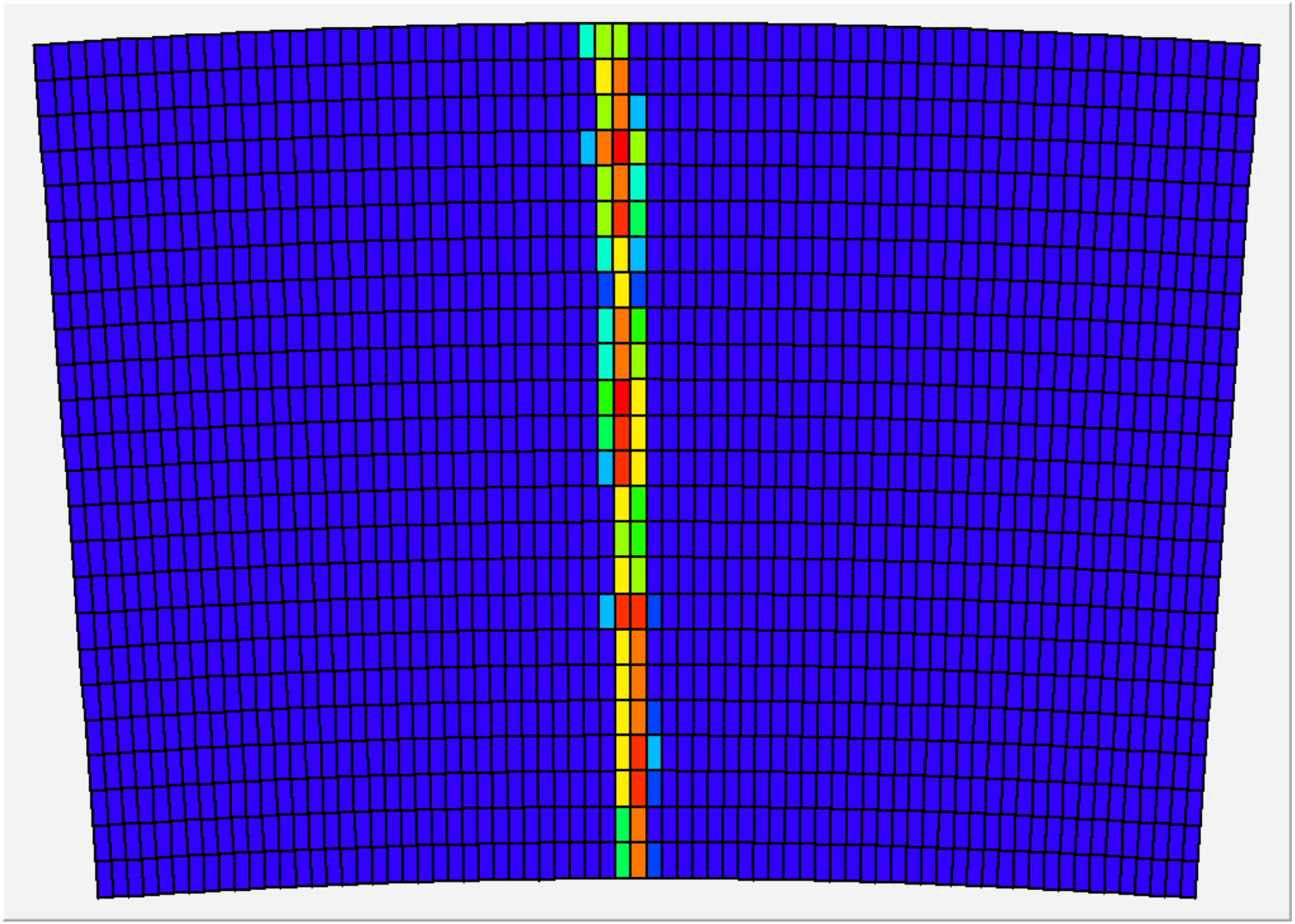
- Generalities:
  - http://www.nordugrid.org/
  - http://www.eu-egee.org
  - http://wiki.egee-see.org/index.php/Main_Page

- First of all, get a Certification Authority (CA):
  - Example for France: http://igc.services.cnrs.fr/GRID-FR

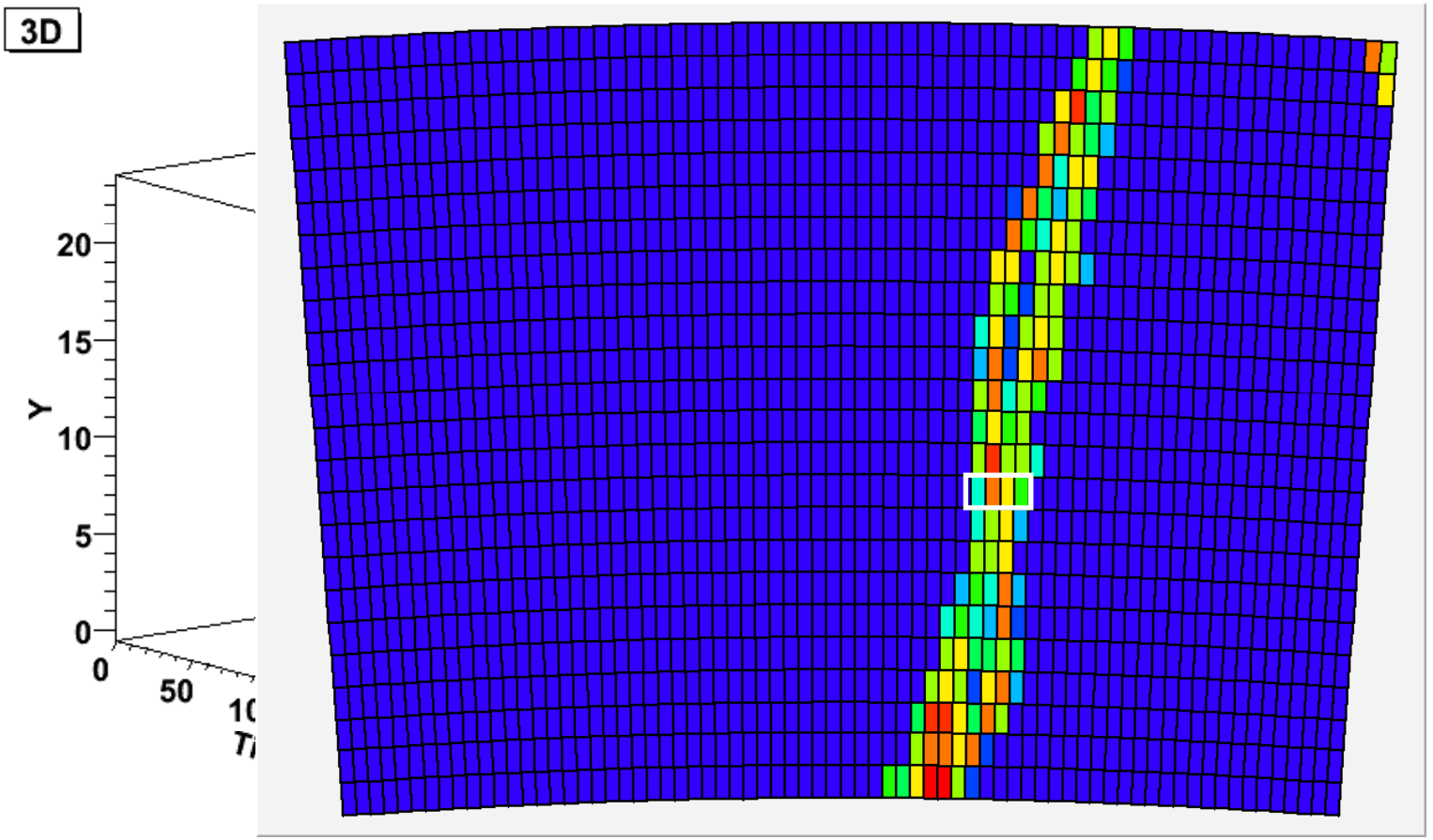
- How to get the Virtual Organization
  - http://grid.desy.de/ilc/
  - direct link to subscribe to 'ilc' VO:

https://grid-voms.desy.de:8443/vo/ilc/vomrs?path=/RootNode/MemberRegistration&action

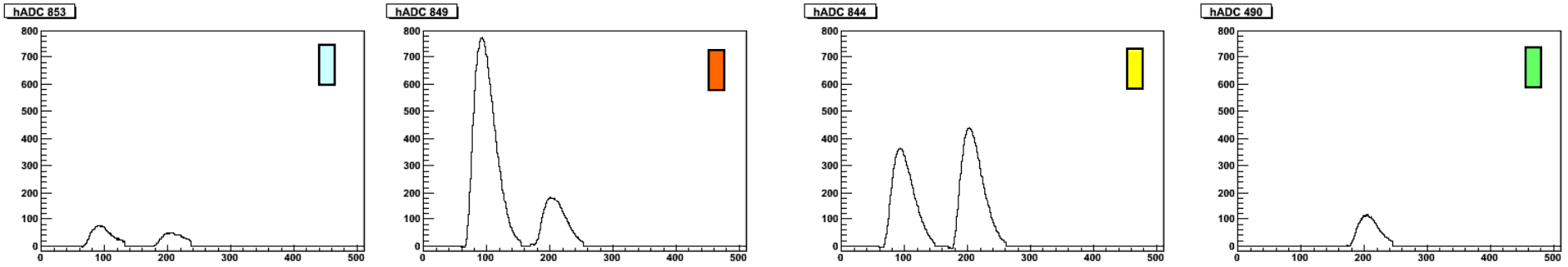
Beam data in T2K gas



Cosmic ray data sample



- Peaking time: 1 µs
- Frequency sampling: 25 MHz



Acknowledgement

Thank you very much

to all

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