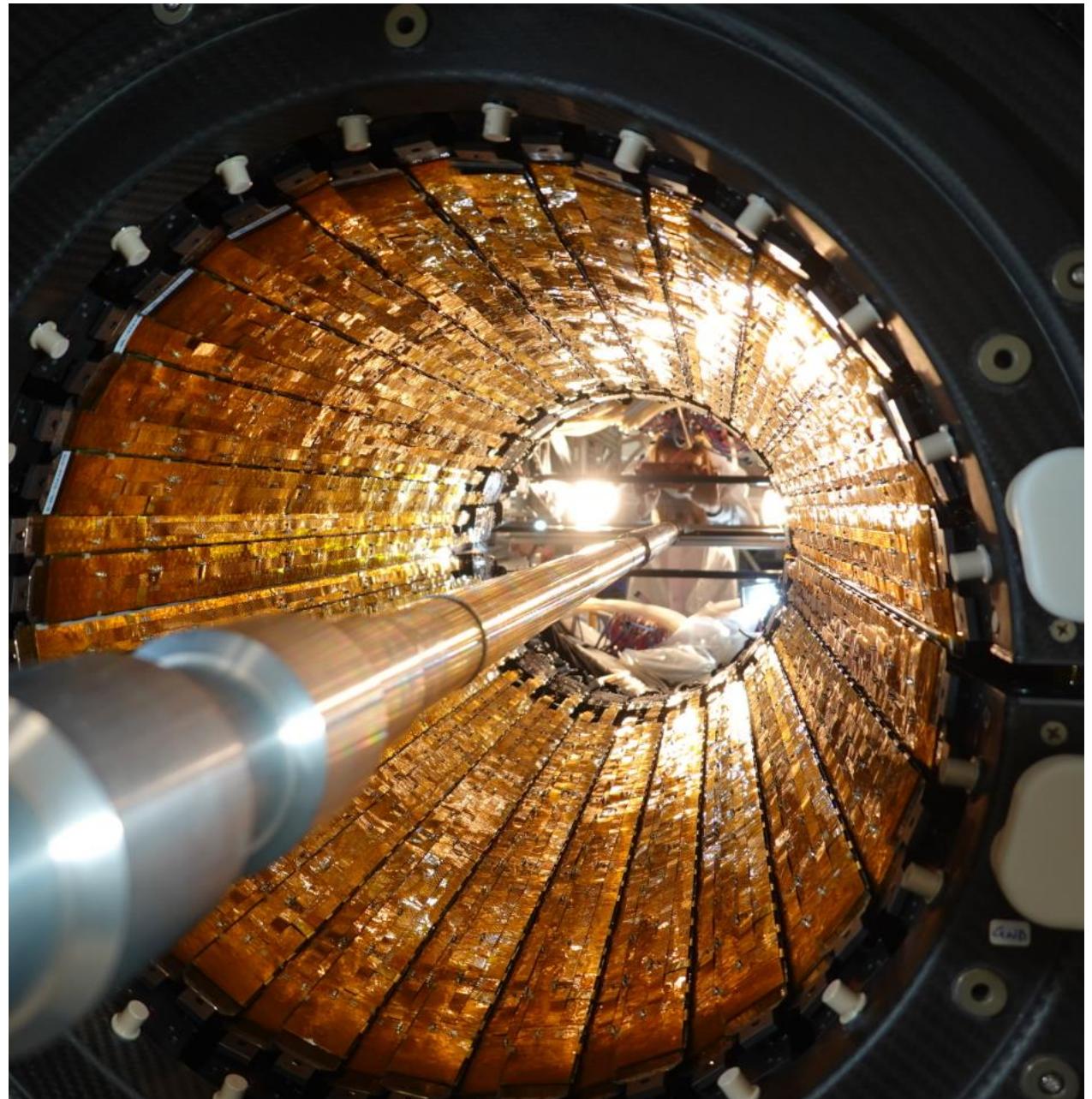




# Charged particle detector characterisation

Johanna Lena and Eleni



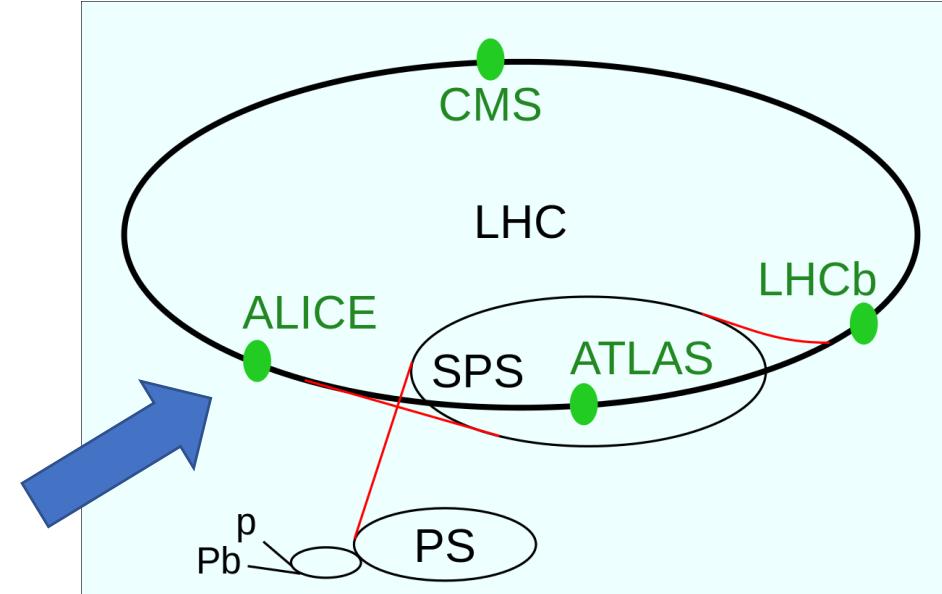


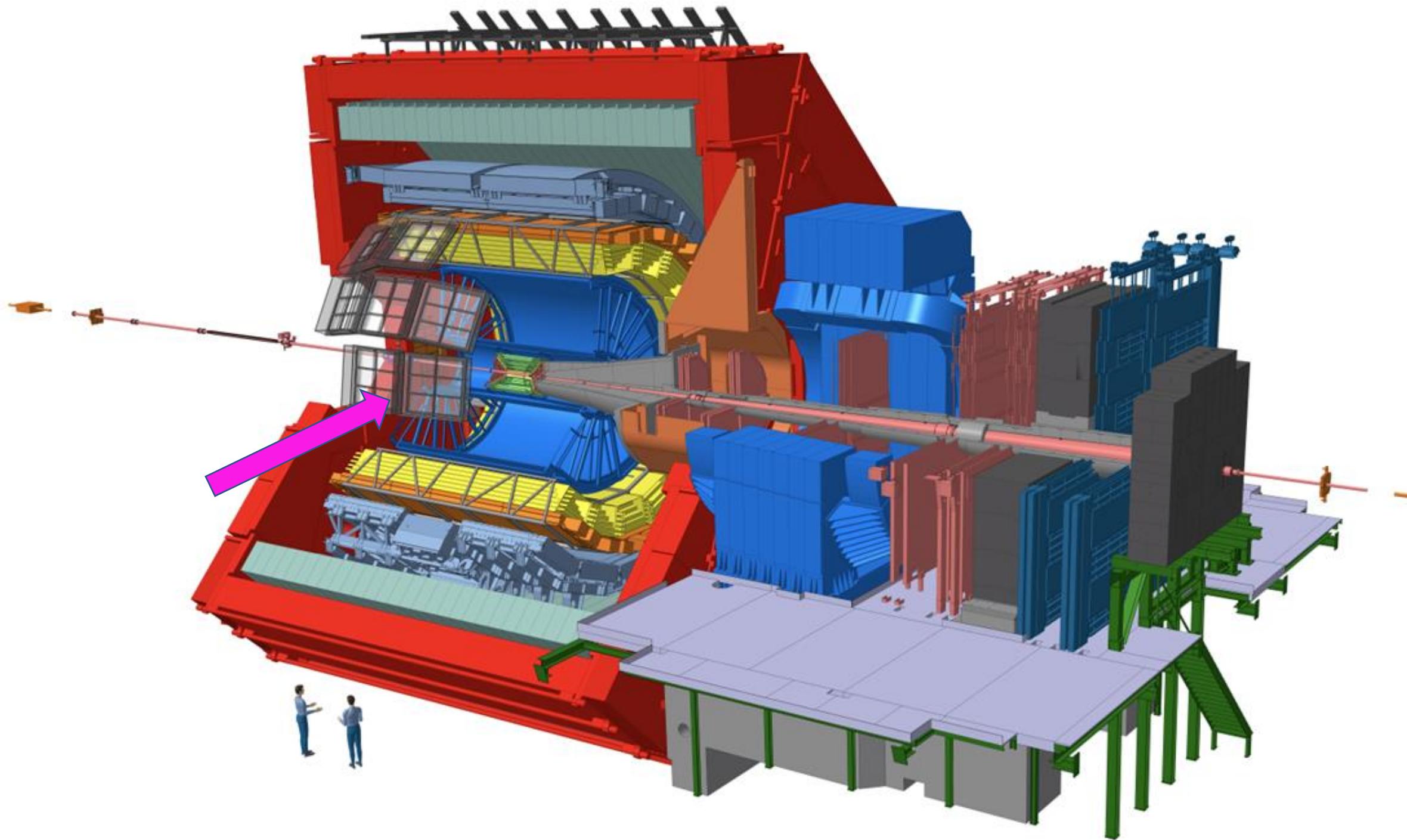
# CONTENT

- General information
- Silicon detectors
- Testing of silicon detectors
- BCM (Beam Condition Monitors)
- BCM Test

# GENERAL INFORMATION

- ALICE: A Large Ion Collider Experiment
- Collision of Nuclei

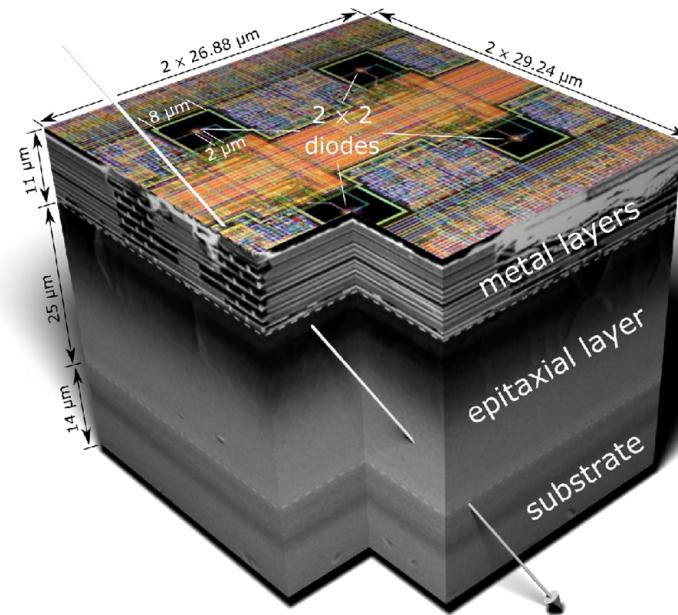
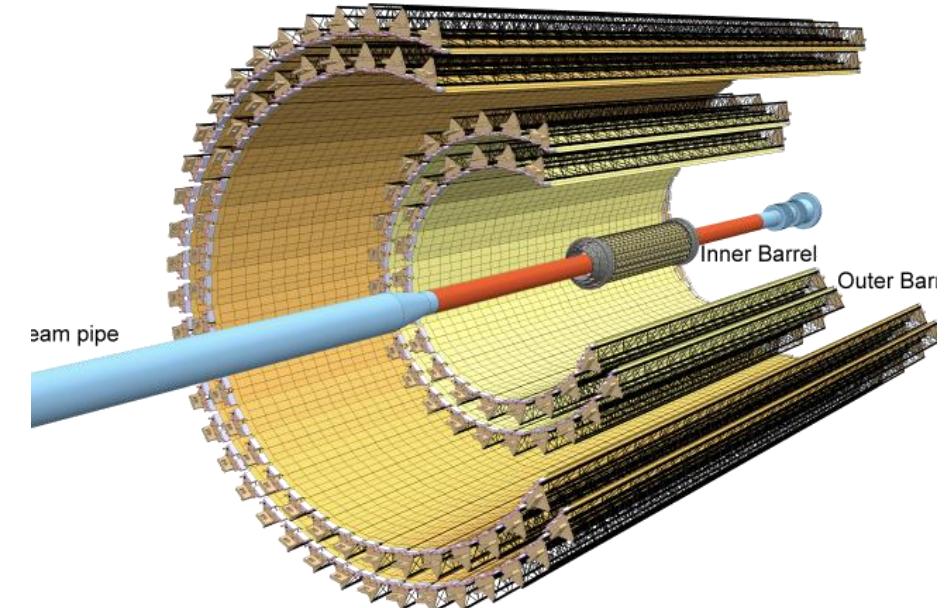






# SILICON DETECTORS

- ITS (Inner Tracking System)
- Silicon detectors





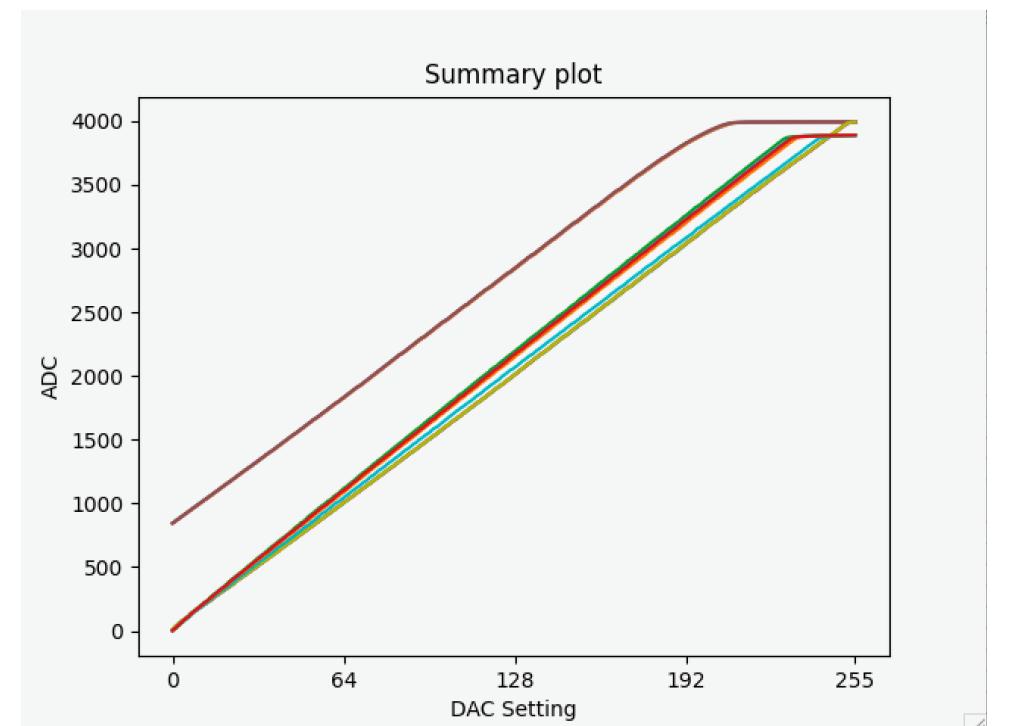
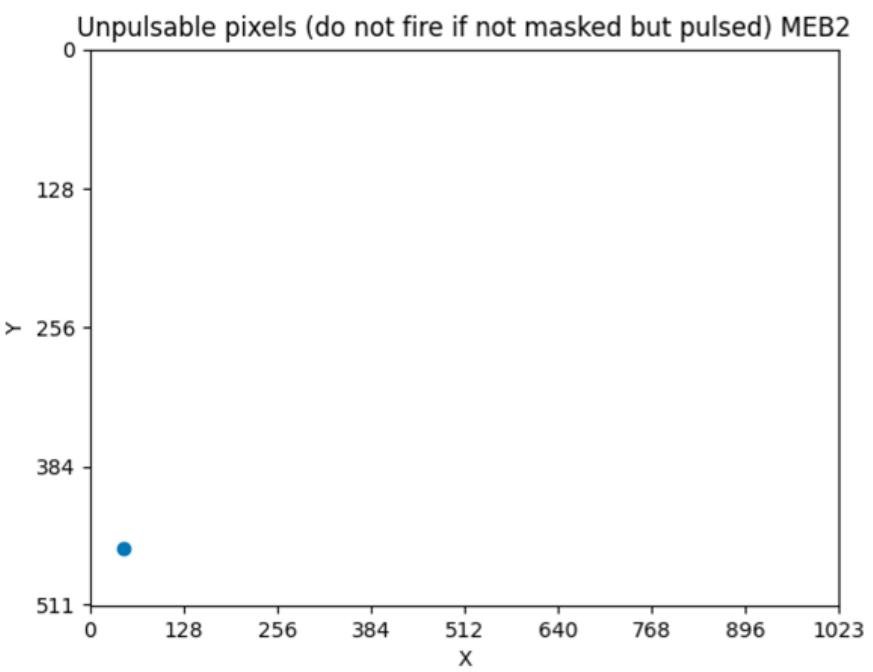
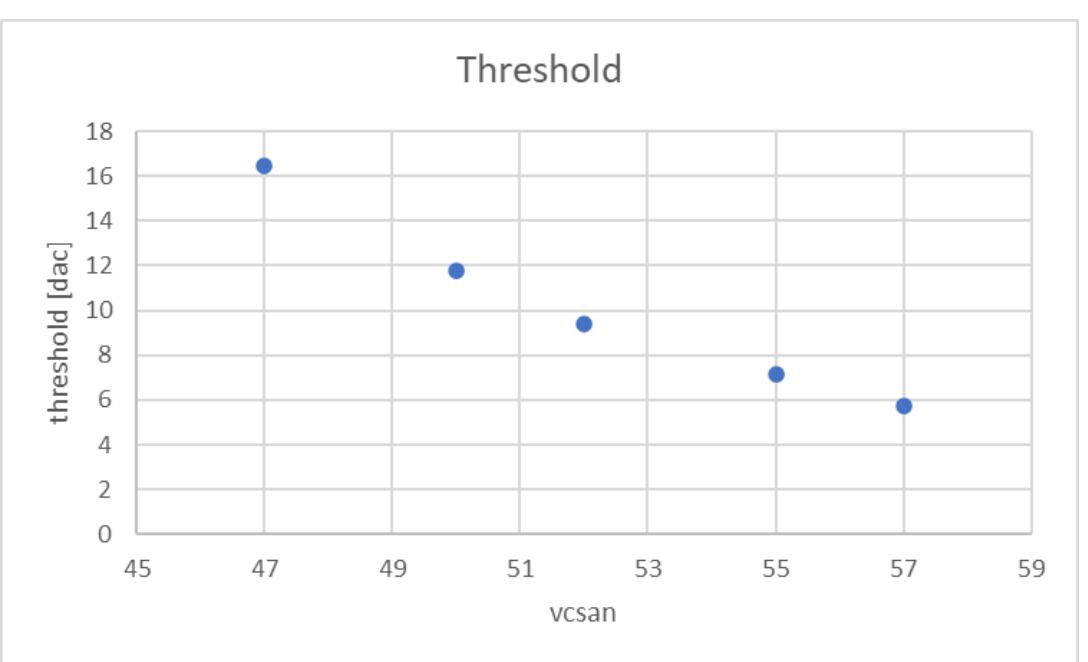
# TEST SILICON DETECTORS ALPIDE (MONOLITHIC ACTIVE PIXEL SENSORS (MAPS))

- Power-on
  - Fifo
  - Dacscan
  - Digitalscan
  - Threshold

				34.92	Tasks: 49, 10 thr: 3 running
█				0.72	Load average: 1.67, 1.51, 1.34
█				1100..00	Uptime: 19:22:39
█				2.02	
█				318M/7.63G	
█				06/100.0%	
<b>task</b>	<b>PR</b>	<b>NL</b>	<b>VM</b>	<b>CPU</b>	<b>Time</b>
pi	20	4	488	23H:38M 30:26S	P 100% 3.0 1s=1.65 /home/pi/.local/bin/alpide
pi	20	10	1101	10:04 93%	R 55.3 0.2 2:24+0.4 pthtrn3 /home/pi/.local/bin/alpide-daemon -sc
pi	20	7	7504	1756 2540	R 1.3 0.0 0.0 14:17,17.00 sbin new -t threshold
pi	20	7	7196	2525 2492	R 0.7 0.0 0.0 0:00,11 htop
pi	20	7	7580	2376 2069	S 0.7 0.0 0.0 0:01,51 htop
pi	20	15356	6004	3372	S 0.7 0.1 0:07,93 sshd :pi@pi:1
pi	20	13688	4460	3376	S 0.0 0.1 0:02,12 sshd :pi@pi:6
pi	20	13688	4456	3372	S 0.0 0.1 0:01,68 sshd :pi@pi:3
root	20	1618	1504	7060	S 0.0 0.1 0:04,68 ssh /bin/init
root	20	25138	8736	7640	S 0.0 0.1 0:01,03 /lib/systemd/systemd-journal
root	20	15178	4720	3564	S 0.0 0.1 0:00,60 /lib/systemd/systemd-udevd
systemd-t	20	88796	4008	3172	S 0.0 0.1 0:00,01 /lib/systemd/systemd-timesyncd
systemd-t	20	88796	4008	3172	S 0.0 0.1 0:00,01 /lib/systemd/systemd-timesyncd
avahi	20	1516	1564	1020	S 0.0 0.0 0:00,00 /usr/sbin/avahi-daemon -p [891-1153-6-local]
root	39	19	2115	1564	S 0.0 0.0 0:00,04 /usr/sbin/avahi -E libavahi-runalsa -s -n
root	20	15040	5320	3394	S 0.0 0.1 0:00,42 /lib/systemd/systemd-logind
managewpa	20	15069	3092	3502	S 0.0 0.0 0:00,00 /usr/bin/dnsd-dæmon --system --address=
nobody	20	0	4488	3300	2092 S 0.0 0.0 0:00,57 /usr/sbin/hd-triggers /etc/trigerrun
root	20	0	6476	5444	2288 S 0.0 0.0 0:00,18 /usr/sbin/cron -f
root	0	-20	1928	72	S 0.0 0.0 0:00,48 /usr/sbin/abootctl
root	20	12420	686	4090	S 0.0 0.1 0:00,35 /bin/upnp_supplicant -u -s -0 /run/upnp_s
root	20	0	2148	180	2740 S 0.0 0.0 0:00,05 /usr/sbin/syslogd -m INONE
root	20	0	2148	180	2740 S 0.0 0.0 0:00,00 /usr/sbin/syslogd -m INONE
root	20	0	2148	180	2740 S 0.0 0.0 0:00,06 /usr/sbin/syslogd -m INONE
root	20	0	2148	180	2740 S 0.0 0.0 0:00,15 /usr/sbin/syslogd -m INONE
avahi	20	0	5872	296	S 0.0 0.0 0:00,00 /var/lib/avahi-daemon: chroot helper
root	20	0	92268	96	S 0.0 0.0 0:00,11 /usr/sbin/rngd -T /dev/huge
root	20	0	92268	96	S 0.0 0.0 0:00,11 /usr/sbin/rngd -T /dev/huge
root	20	0	92268	96	S 0.0 0.0 0:00,00 /usr/sbin/rngd -T /dev/huge
root	20	0	22856	96	S 0.0 0.0 0:01,25 /usr/sbin/rngd -T /dev/huge
root	20	0	12704	368	1512 S 0.0 0.0 0:00,81 wpa_supplicant -B -c /etc/wpa_supplicant/wpa_supplicant.conf
root	20	0	2248	140	S 0.0 0.0 0:00,00 /usr/bin/hciattach dev/serial1 bcd43xx 3
root	20	0	10712	5040	4540 S 0.0 0.1 0:00,02 /usr/lib/bluetooth/bluetoothd
root	20	0	3068	1904	1448 S 0.0 0.0 0:00,33 /sbin/dhcpcd -r -w
root	20	0	5300	392	1288 S 0.0 0.0 0:00,00 /sbin/agetty -p 0 -w -u -nuclear tty1

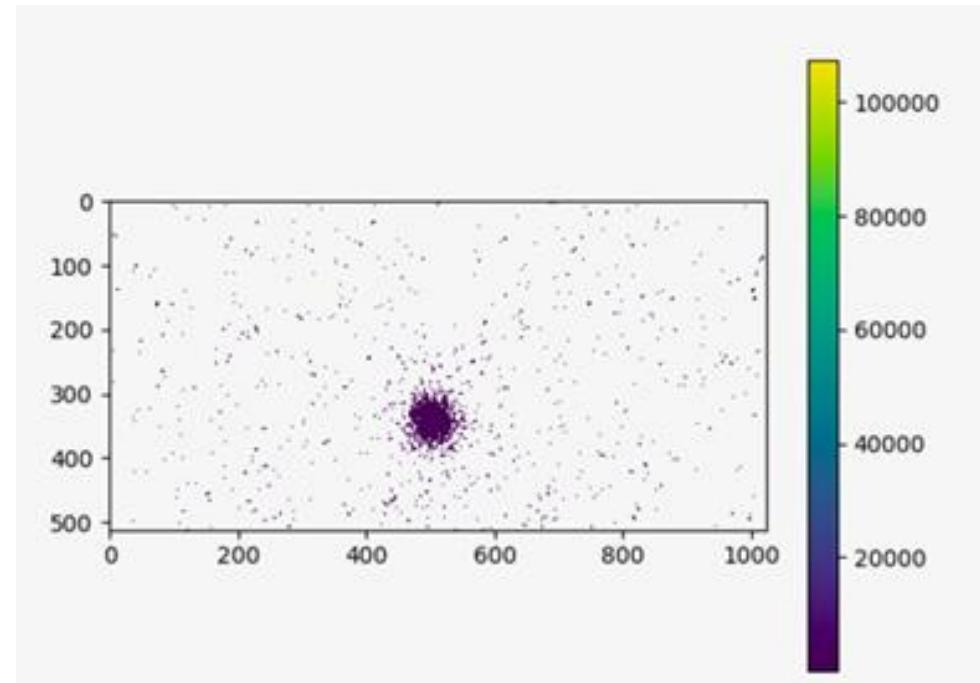
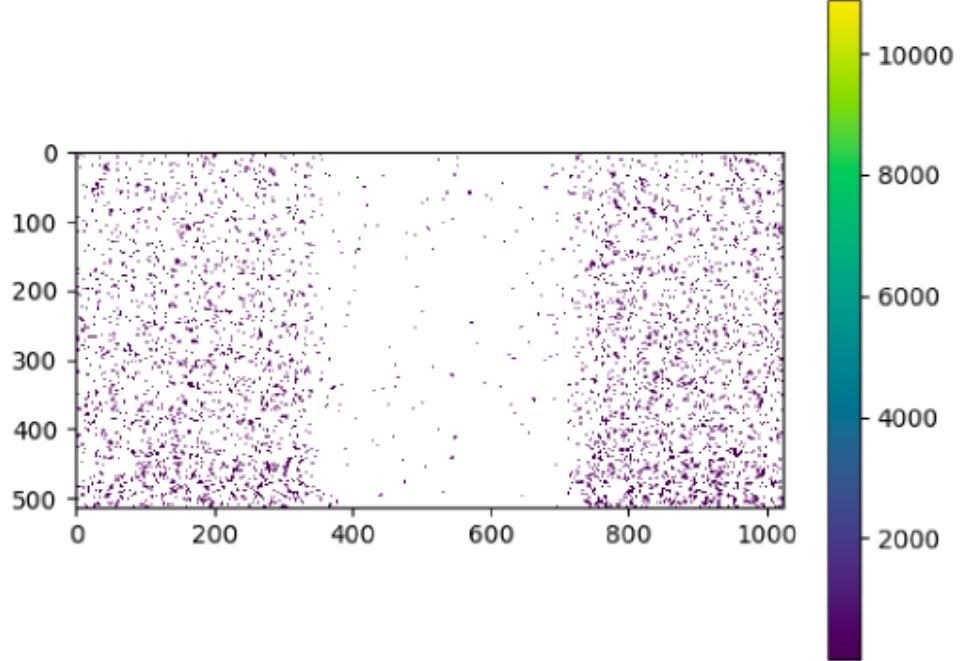
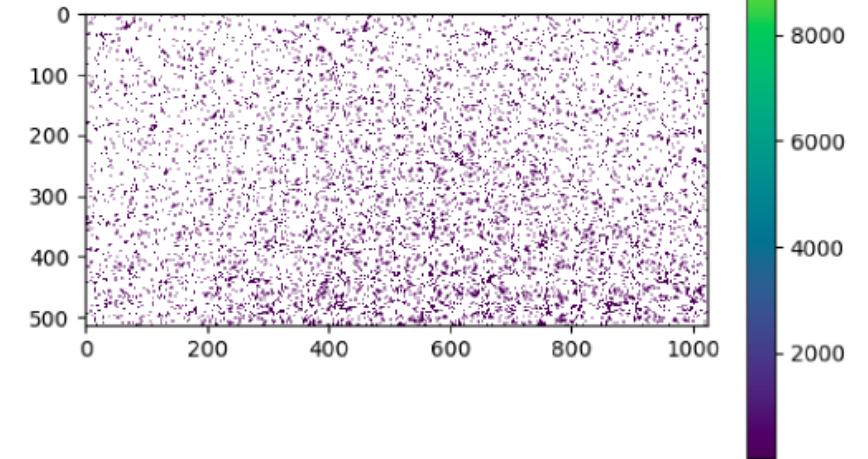


# Plots





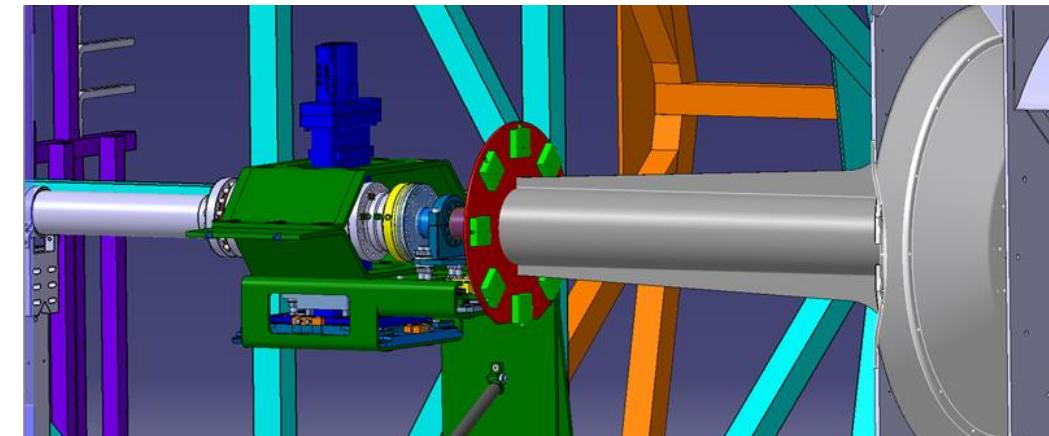
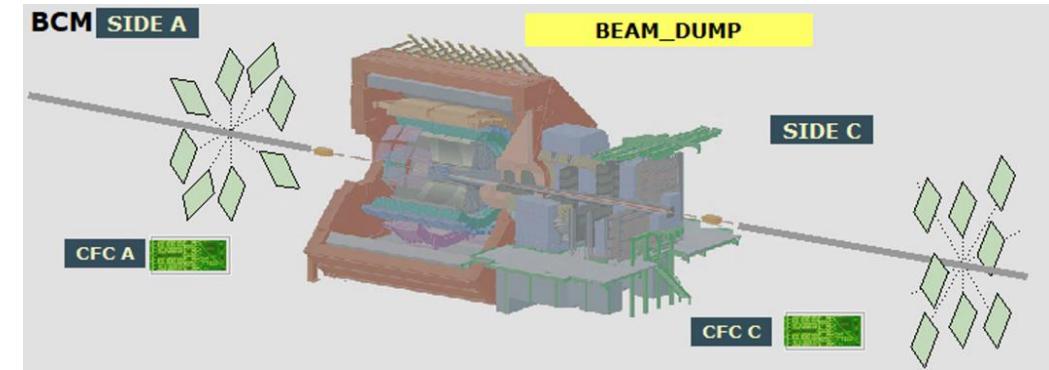
# Hitmaps





# BCM

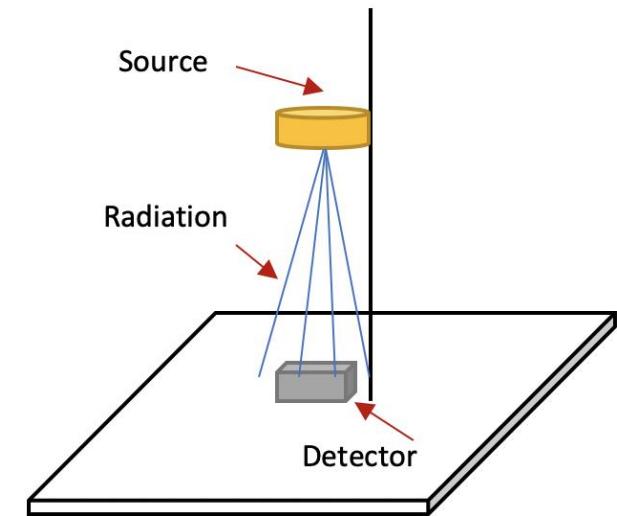
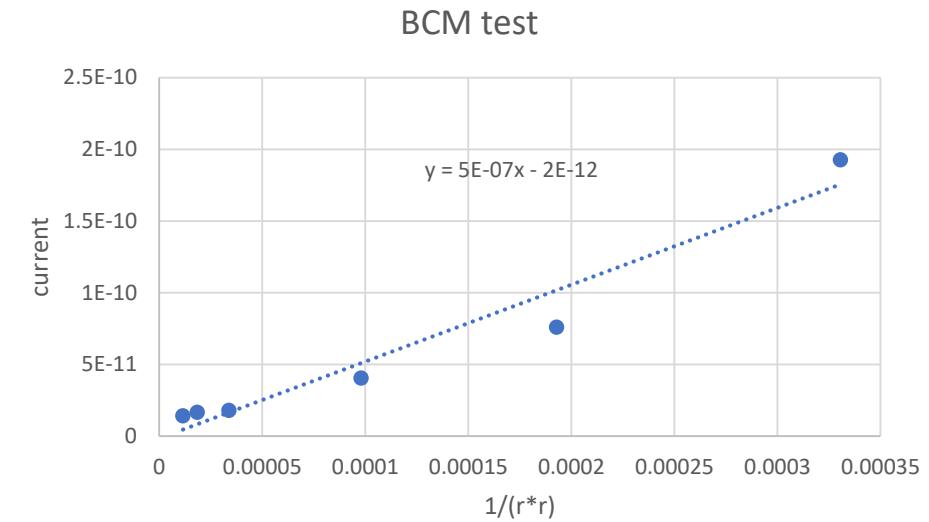
- Beam Condition Monitoring
- Before and after the experiment





# BCM TESTING

- Current and  $1/r^2$  linear
- Measurement on different heights
- Measurements of the currents





# PICTURES

- <https://cds.cern.ch/images/ALICE-PHO-ITS-2021-001-32/file?size=large>
- [https://upload.wikimedia.org/wikipedia/commons/thumb/0/07/LHC\\_02.svg/1200px-LHC\\_02.svg.png](https://upload.wikimedia.org/wikipedia/commons/thumb/0/07/LHC_02.svg/1200px-LHC_02.svg.png)