Experience with ARC System in Pisa

L. Teodorescu for
Pisa Module Test Group

Outline

- Goals and tested samples
- Results of measurements
- Comparison ARC CMS-like measurements
- Conclusions

Goal of tests

- test of our ARC system
- not full characterisation of modules

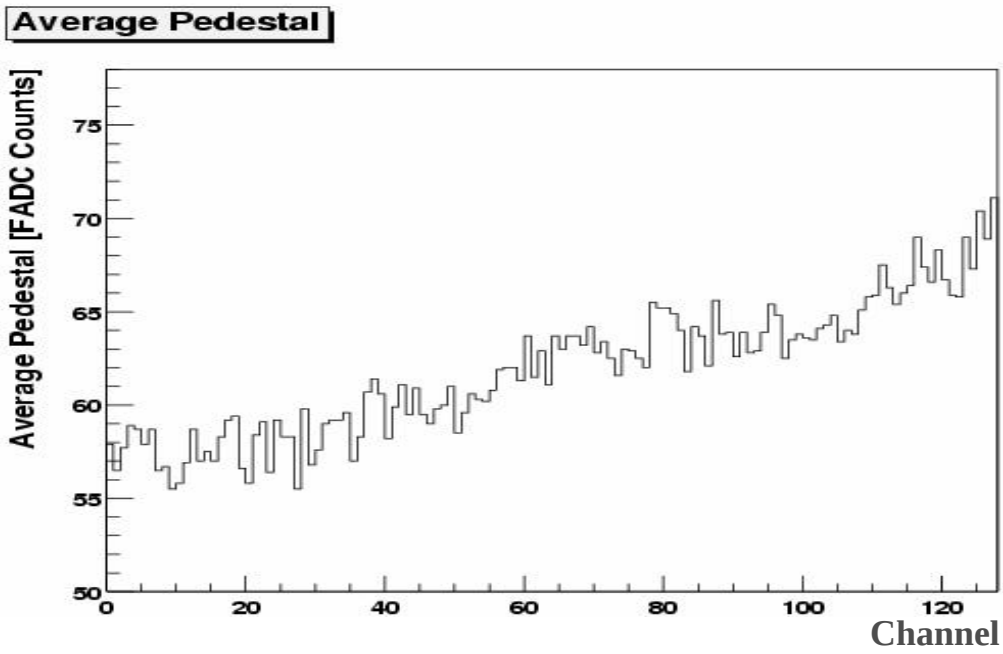
Tested samples

- TIB001 and TIB002
- no HV bias on sensors

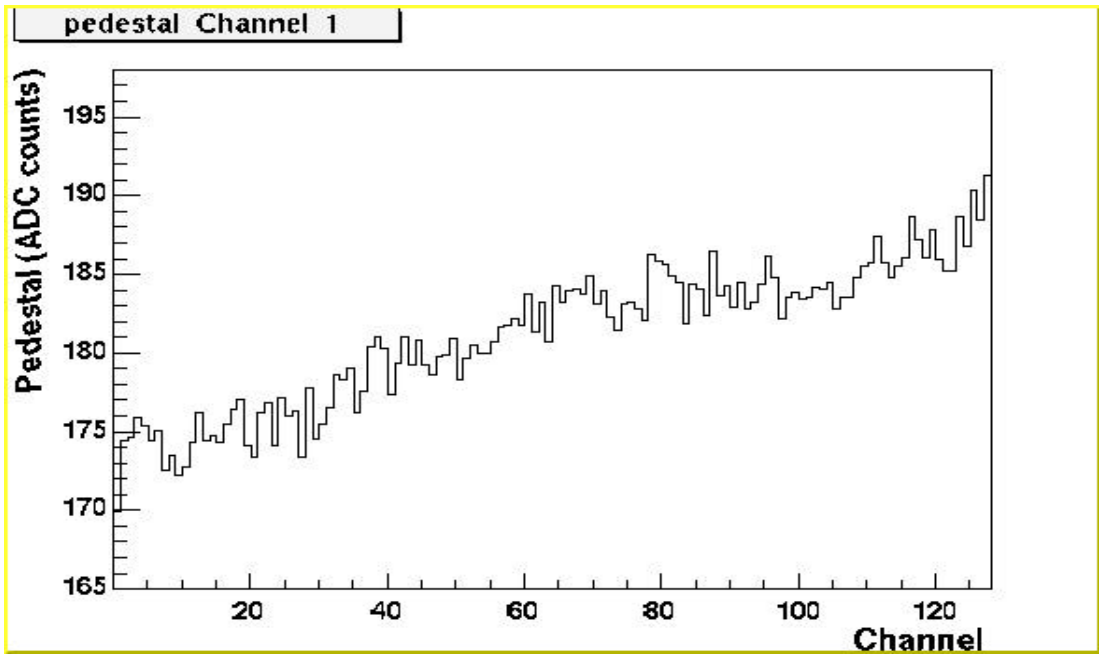
Pedestal - TIB001, APV1

ARC – no HV

Chip Settings:
I2C.Address= 64
Mode= 43
Latency= 4
IPRE= 98
IPCASC= 52
IPSF= 34
ISHA= 34
ISSF= 34
IPSP= 55
IMUXIN= 34
ISPARE= 0
ICAL= 29
VFP= 30
VFS= 60
VPSP= 40
CDRV= 254
CSEL= 1
MUXGAIN= 4
Error= 0
MUX_Res= 3
PLL_1= 1
PLL_2= 0
PLL_3= 127



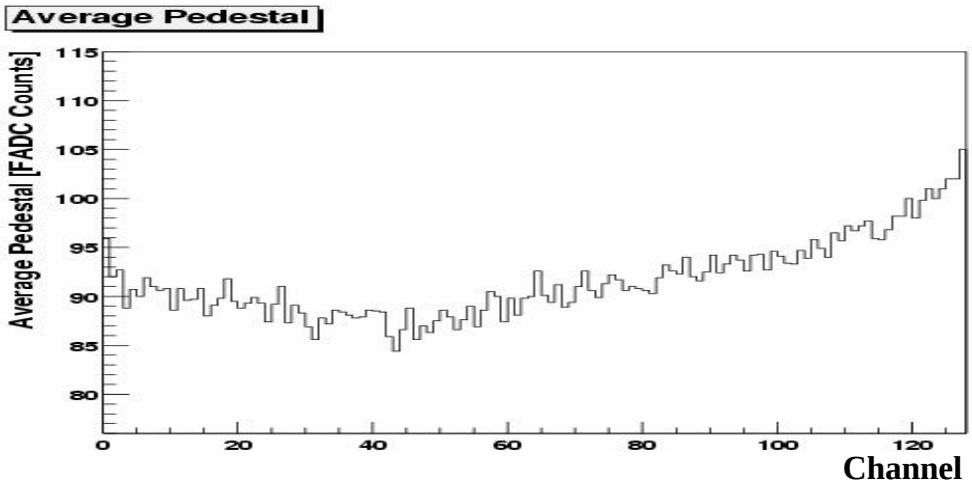
CMS – like no HV



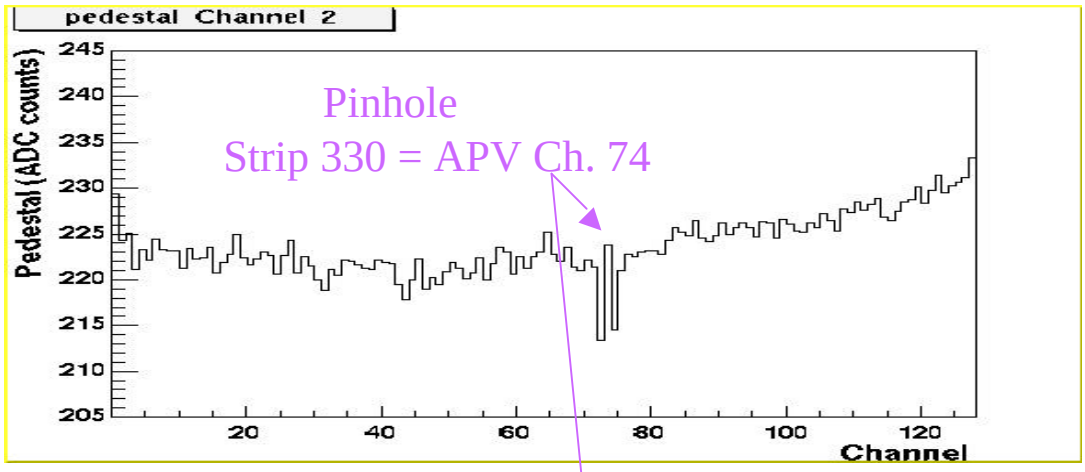
Pedestal - TIB002, APV3

ARC – no HV

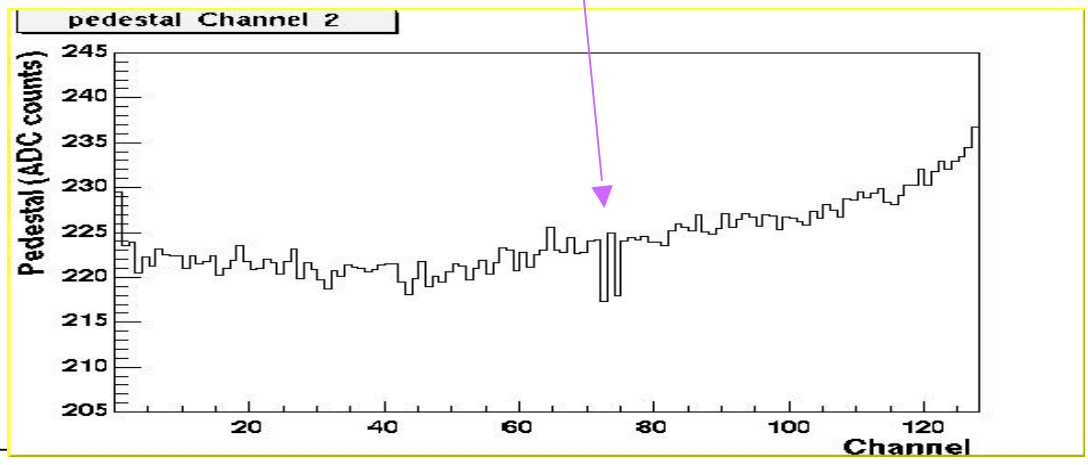
Chip Settings:
I2C_Address= 72
Mode= 43
Latency= 4
IPRE= 98
IPCASC= 52
IPSF= 34
ISHA= 34
ISSF= 34
IPSP= 55
IMUXIN= 34
ISPARE= 0
ICAL= 29
VFP= 30
VFS= 60
VPSP= 40
CDRV= 254
CSEL= 1
MUXGAIN= 4
Error= 0
MUX_Res= 3
PLL_1= 1
PLL_2= 0
PLL_3= 127



CMS – like no HV



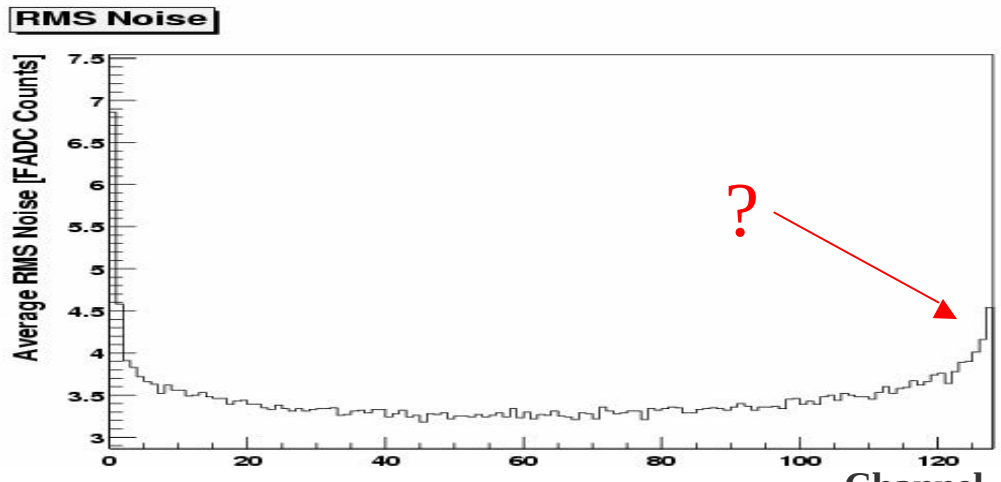
CMS – like 450V



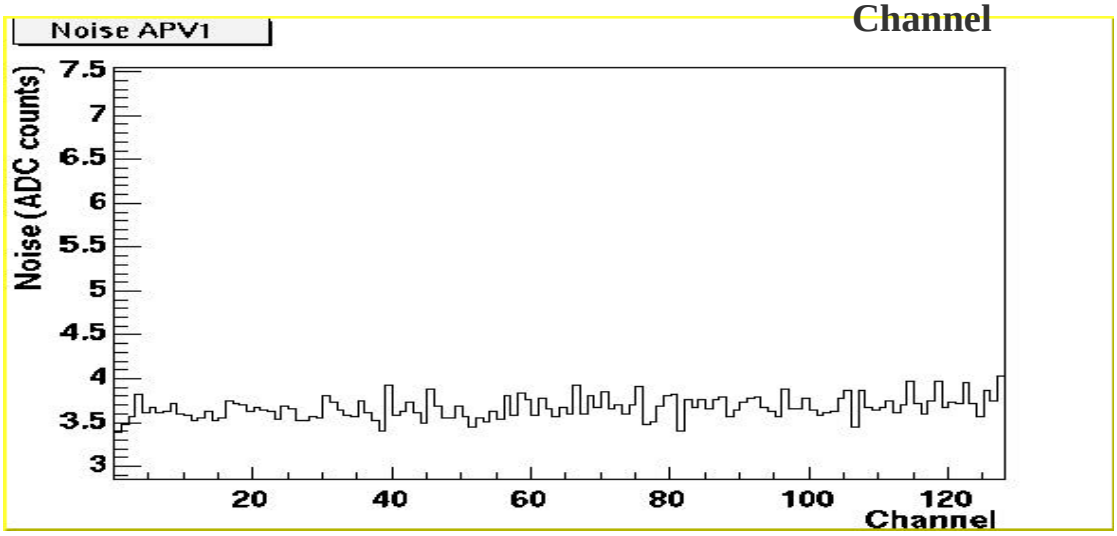
Noise - TIB001, APV1

ARC – no HV

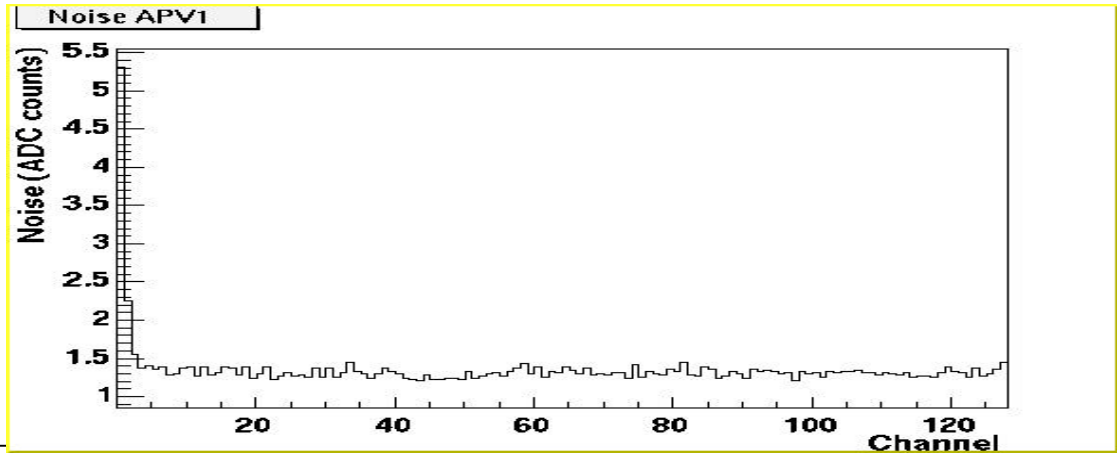
Chip Settings:
I2C_Address= 64
Mode= 43
Latency= 4
IPRE= 98
IPCASC= 52
IPSF= 34
ISHA= 34
ISSF= 34
IPSP= 55
IMUXIN= 34
ISPARE= 0
ICAL= 29
VFP= 30
VFS= 60
VPSP= 40
CDRV= 254
CSEL= 1
MUXGAIN= 4
Error= 0
MUX_Res= 3
PLL_1= 1
PLL_2= 0
PLL_3= 127



CMS – like no HV



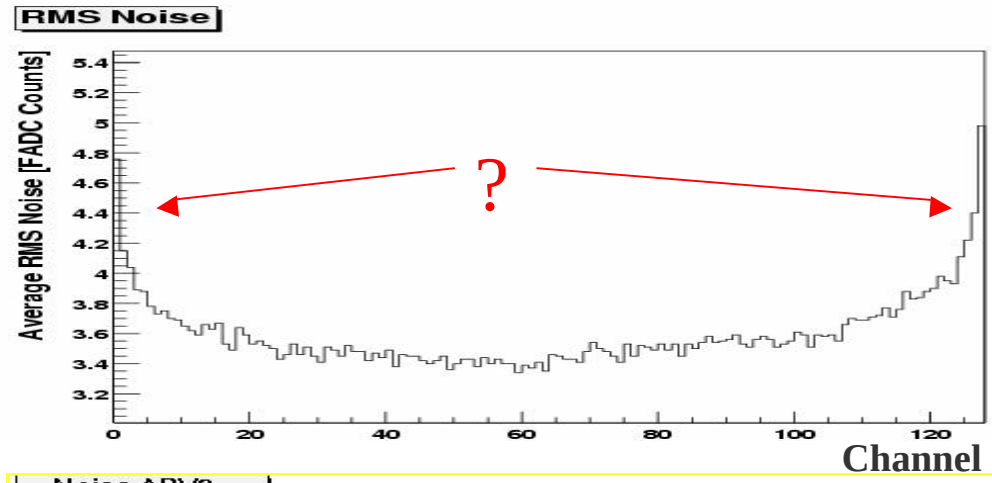
CMS – like 300V



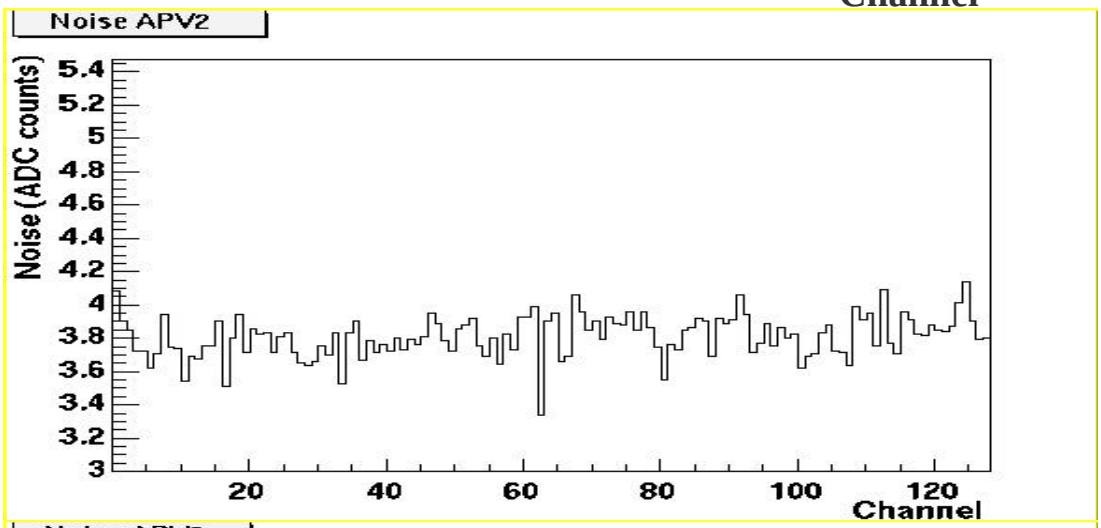
Noise - TIB001, APV2

ARC – no HV

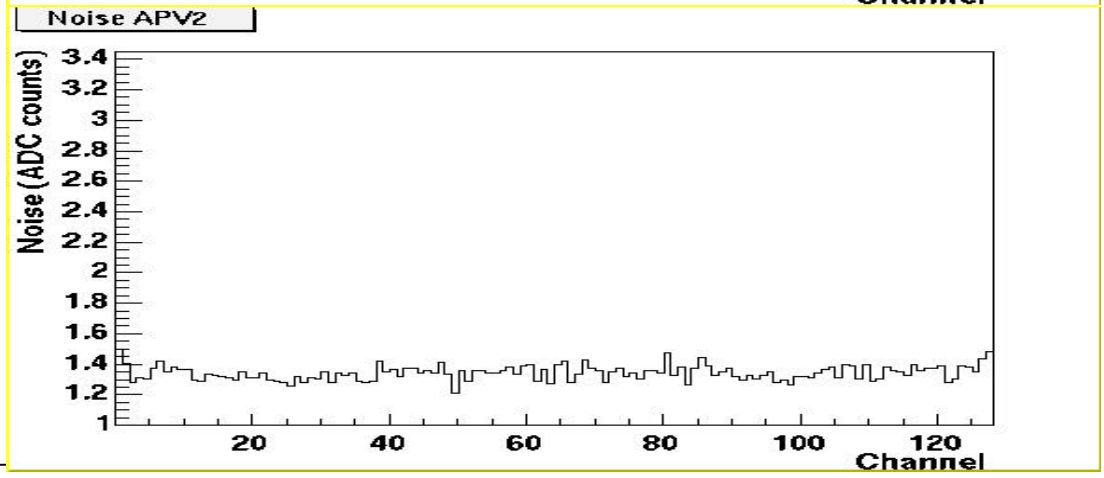
Chip Settings:
I2C_Address= 66
Mode= 43
Latency= 4
IPRE= 98
IPCASC= 52
IPSF= 34
ISHA= 34
ISSF= 34
IPSP= 55
IMUXIN= 34
ISPARE= 0
ICAL= 29
VFP= 30
VFS= 60
VPSP= 40
CDRV= 254
CSEL= 1
MUXGAIN= 4
Error= 0
MUX_Res= 3
PLL_1= 1
PLL_2= 0
PLL_3= 127



CMS – like no HV



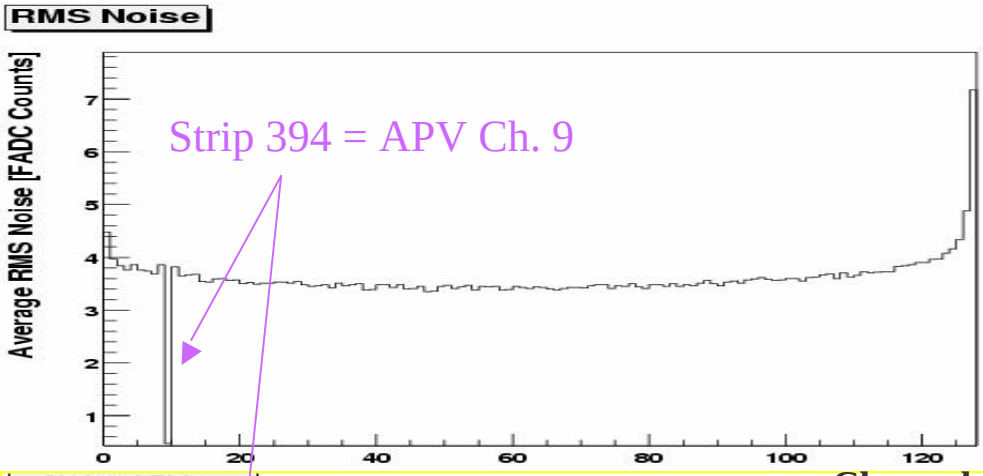
CMS – like 300V



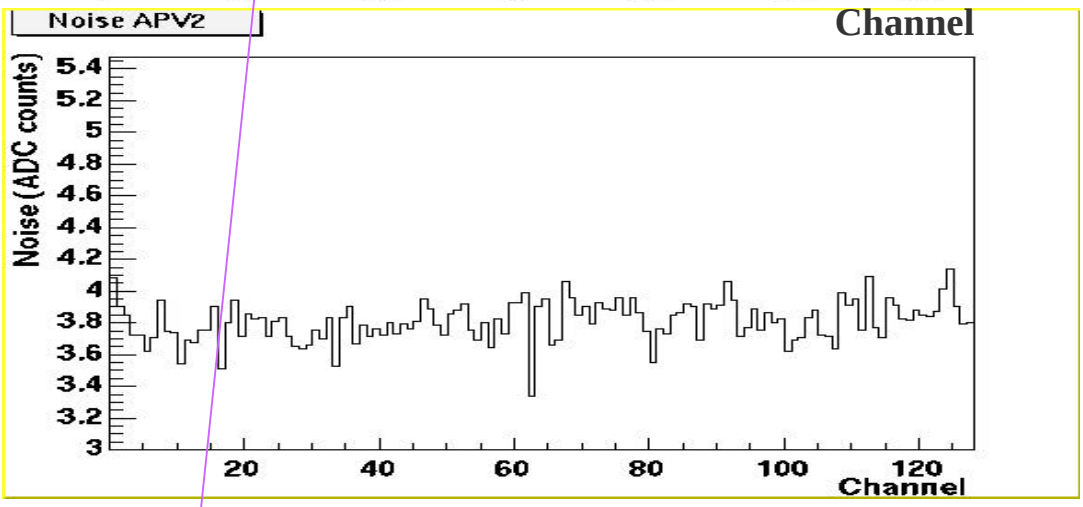
Noise - TIB001, APV4

ARC – no HV

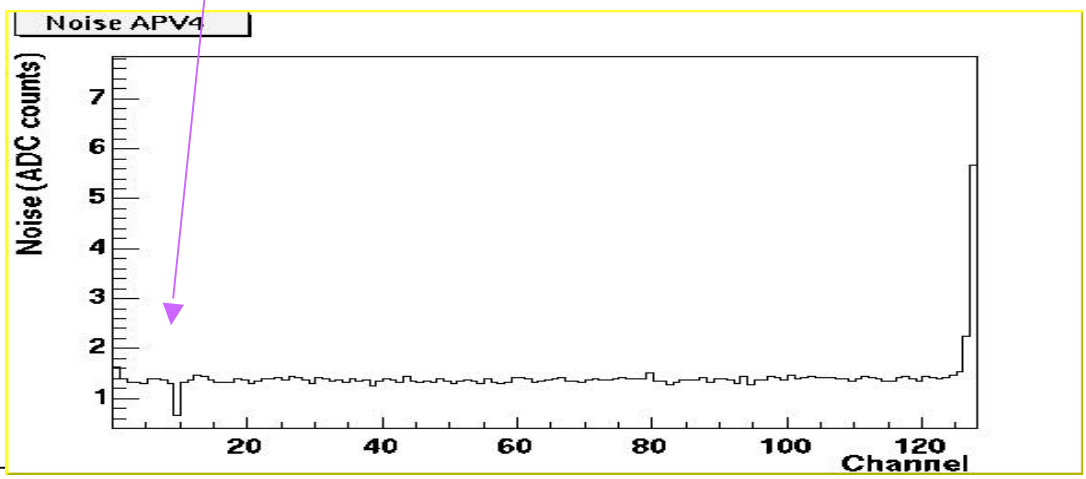
Chip Settings:
I2C_Address= 74
Mode= 43
Latency= 4
IPRE= 98
IPCASC= 52
IPSF= 34
ISHA= 34
ISSF= 34
IPSP= 55
IMUXIN= 34
ISPARE= 0
ICAL= 29
VFP= 30
VFS= 60
VPSP= 40
CDRV= 254
CSEL= 1
MUXGAIN= 4
Error= 0
MUX_Res= 3
PLL_1= 1
PLL_2= 0
PLL_3= 127



CMS – like no HV

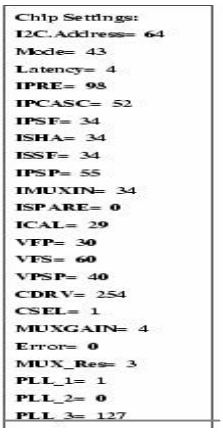


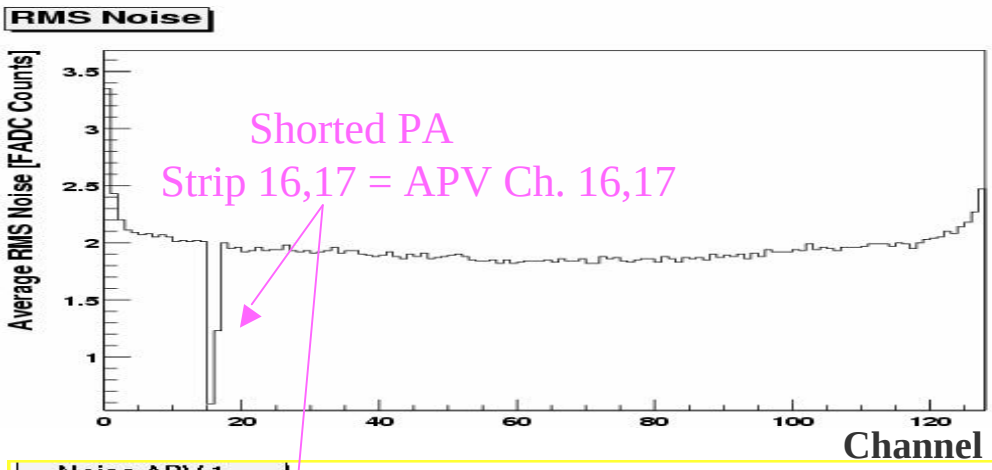
CMS – like 300V



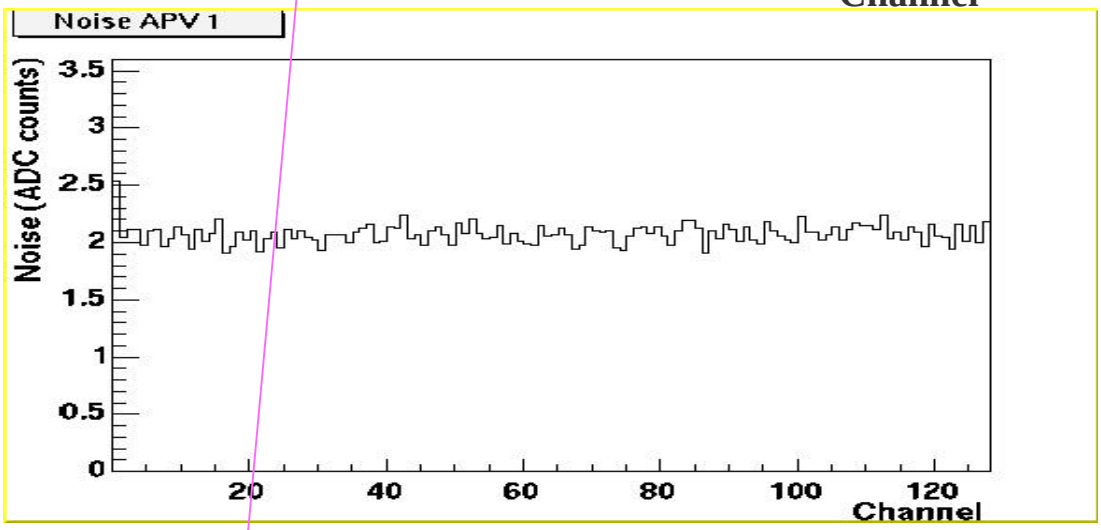
Noise - TIB002, APV1

ARC – no HV

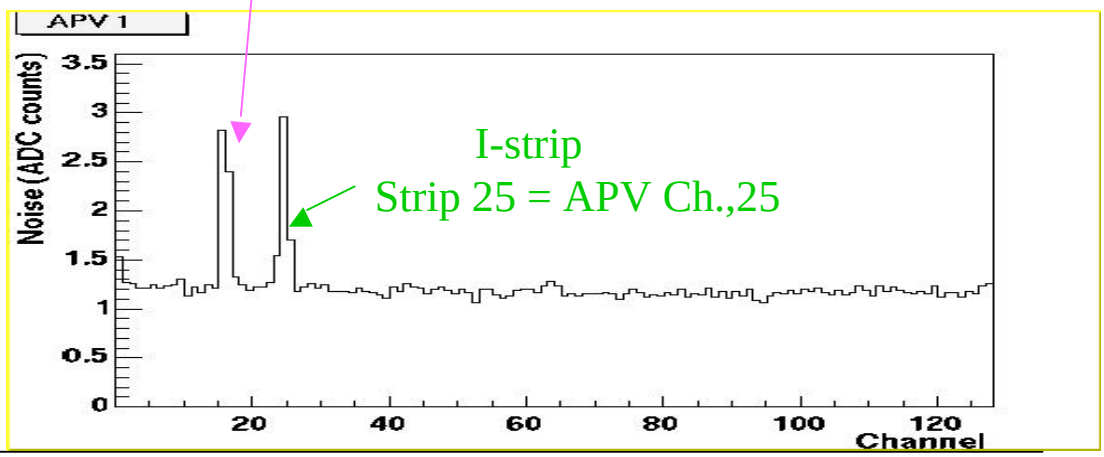




CMS – like no HV

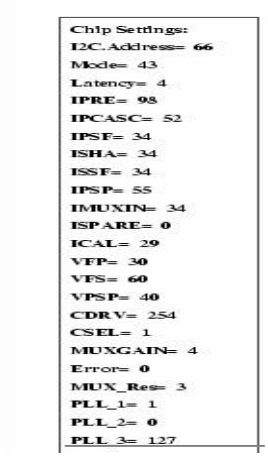


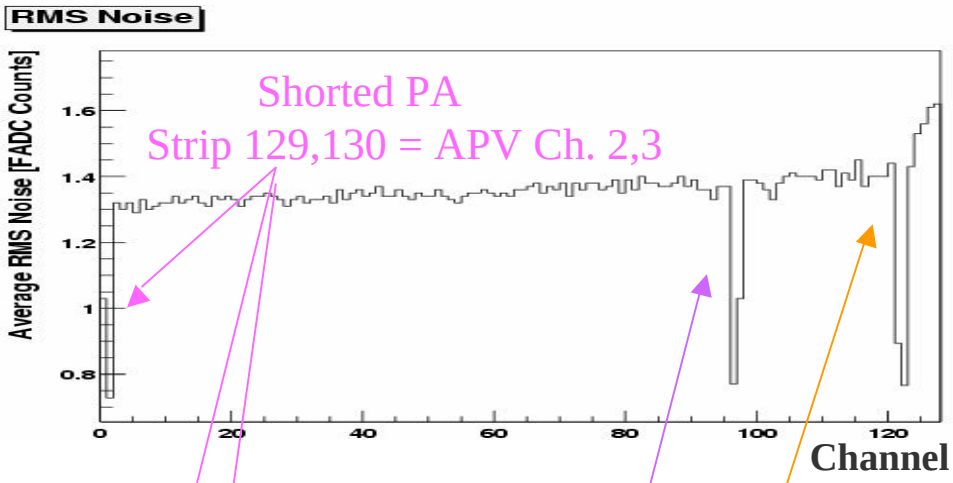
CMS – like 450V



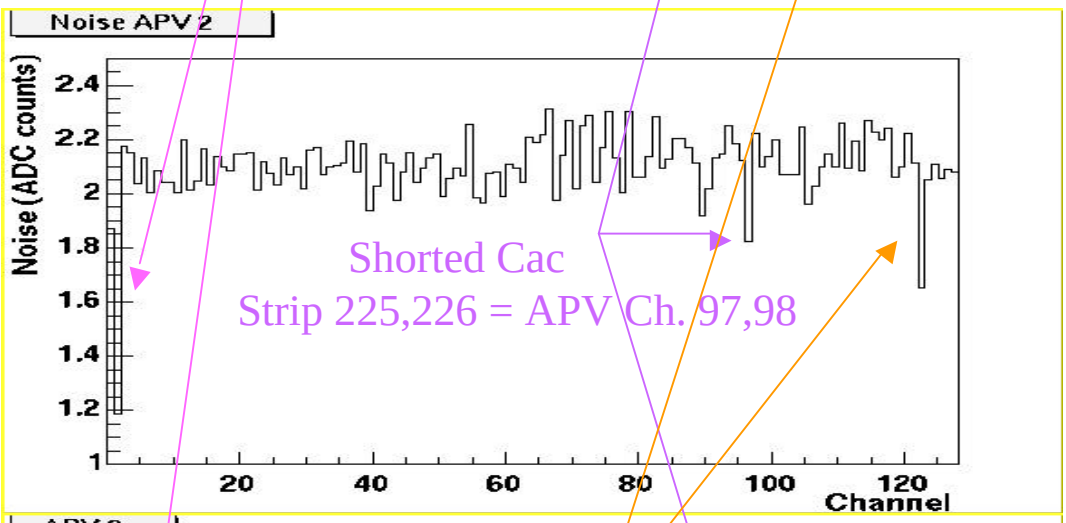
Noise - TIB002, APV2

ARC – no HV

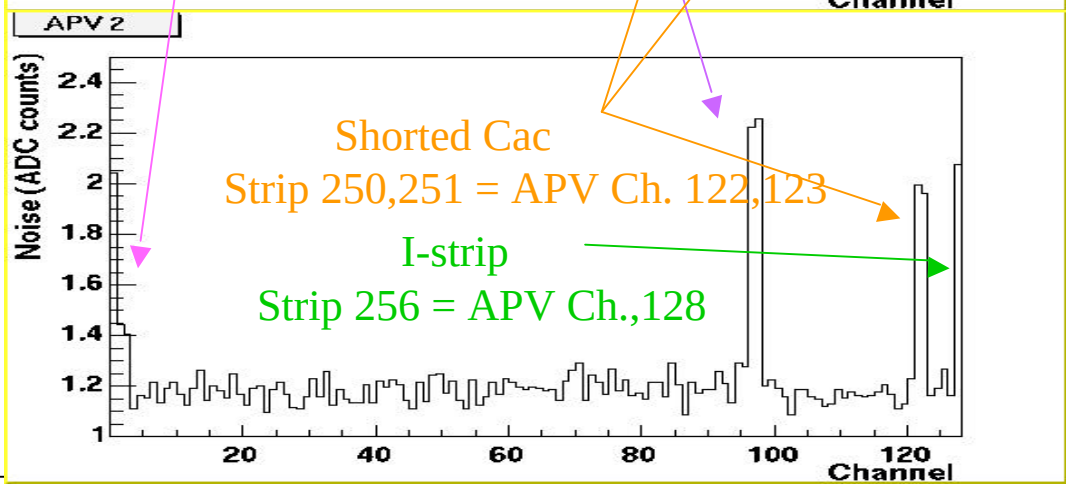




CMS – like no HV



CMS – like 450V

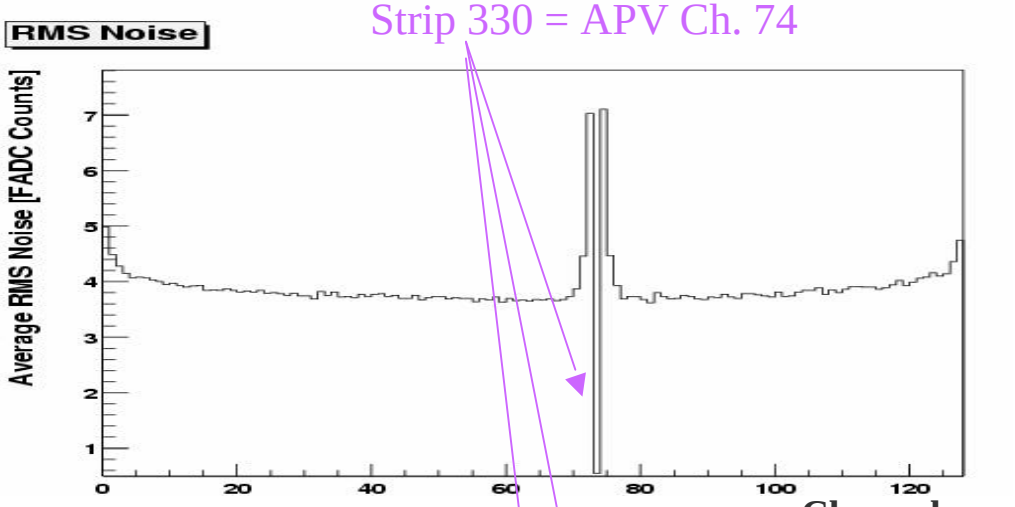


Noise - TIB002, APV3

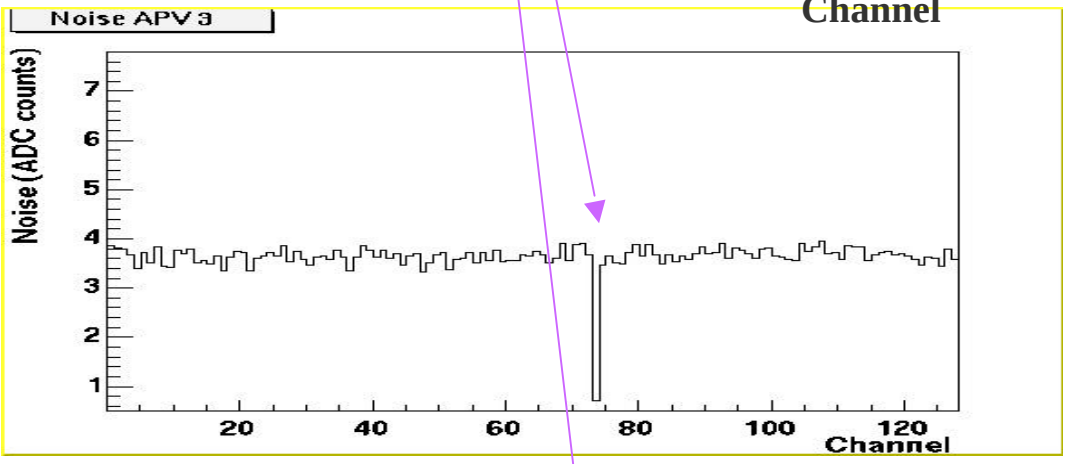
ARC – no HV

Chip Settings:
I2C.Address= 72
Mode= 43
Latency= 4
IPRE= 98
IPCASC= 52
IPSF= 34
ISHA= 34
ISSF= 34
IPSP= 55
IMUXIN= 34
ISPARE= 0
ICAL= 29
VFP= 30
VFS= 60
VPSP= 40
CDRV= 254
CSEL= 1
MUXGAIN= 4
Error= 0
MUX_Res= 3
PLL_1= 1
PLL_2= 0
PLL_3= 127

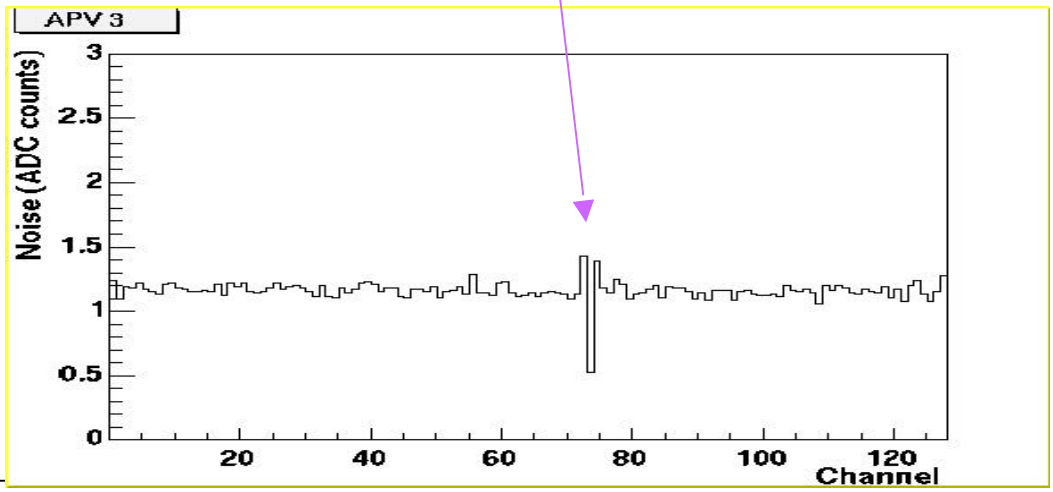
Pinhole
Strip 330 = APV Ch. 74



CMS – like no HV

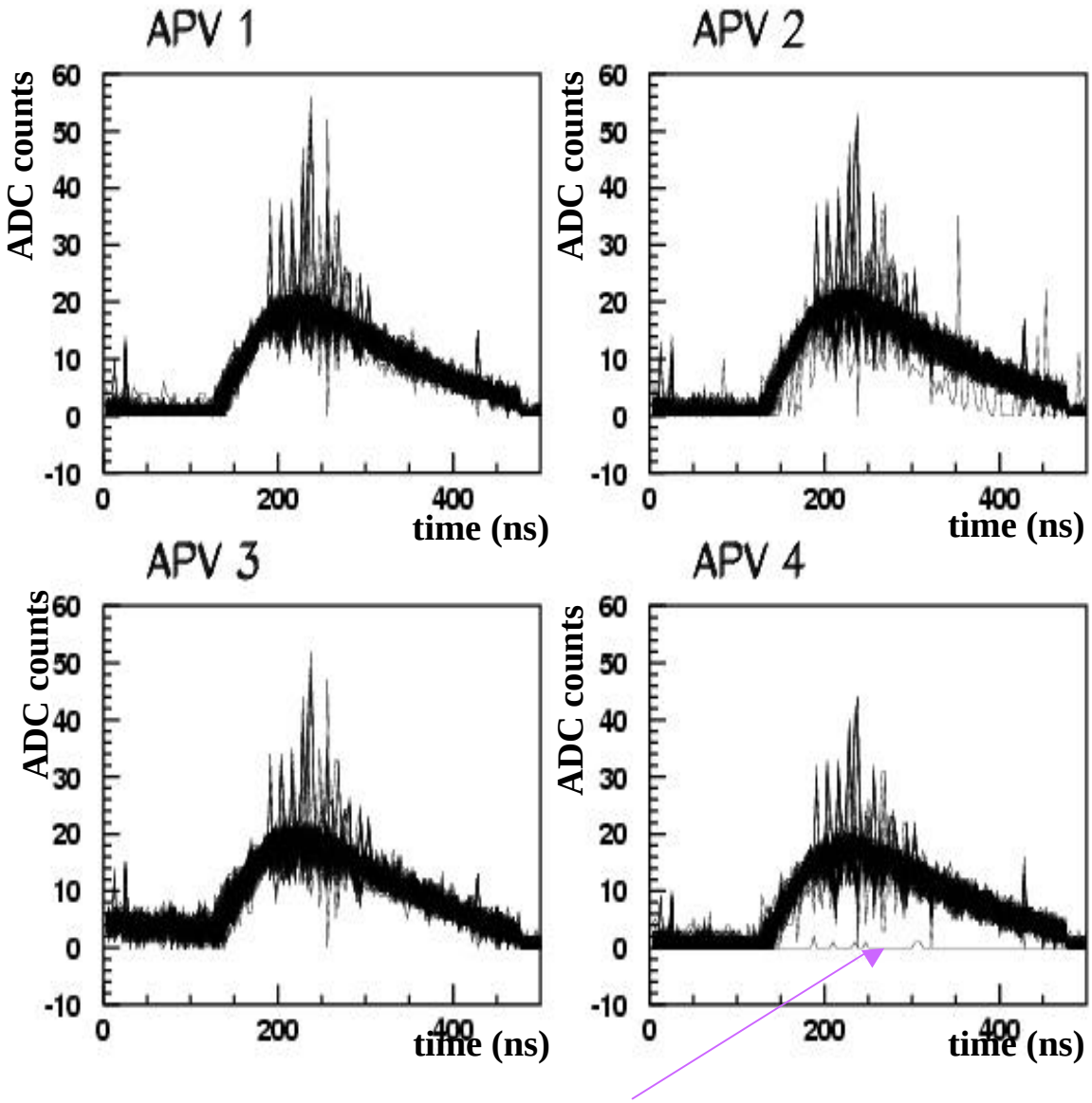


CMS – like 450V



Pulse Shape - TIB001

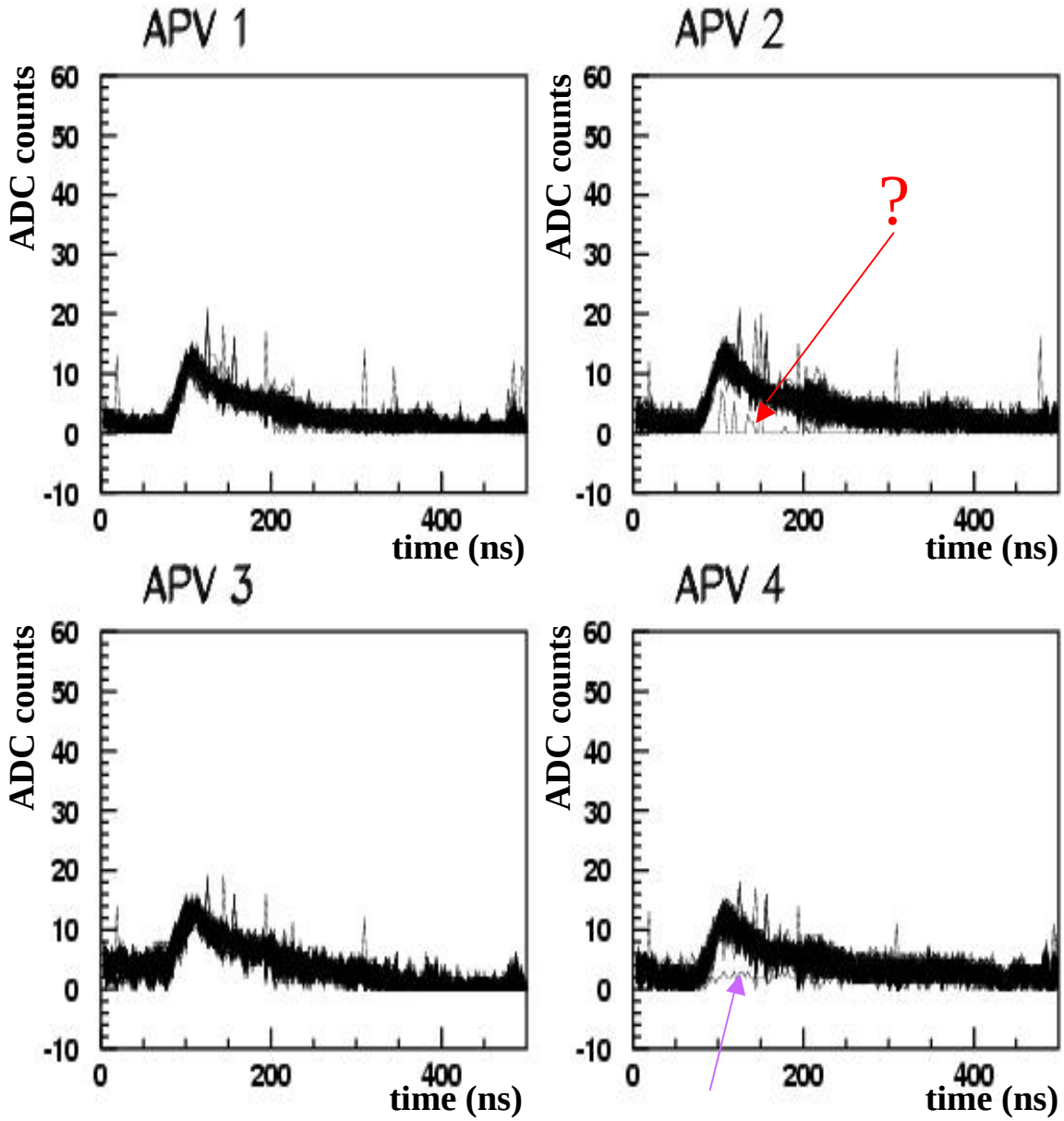
Peak mode



Strip 394 = APV Ch. 9

Pulse Shape - TIB001

Deconvolution mode



Strip 394 = APV Ch. 9

Conclusions

ARC system – functionable in Pisa

Pedestal

- Similar structure for both systems

Noise

- APV edges channels – higher noise
- APV middle channels – similar noise with CMS-like system
- ARC system finds all defected strips, exept high current ones, even without HV bias on sensors

Pulse shape

- generally, as expected
- additional spikes – to be undersood