

AMS Software Review

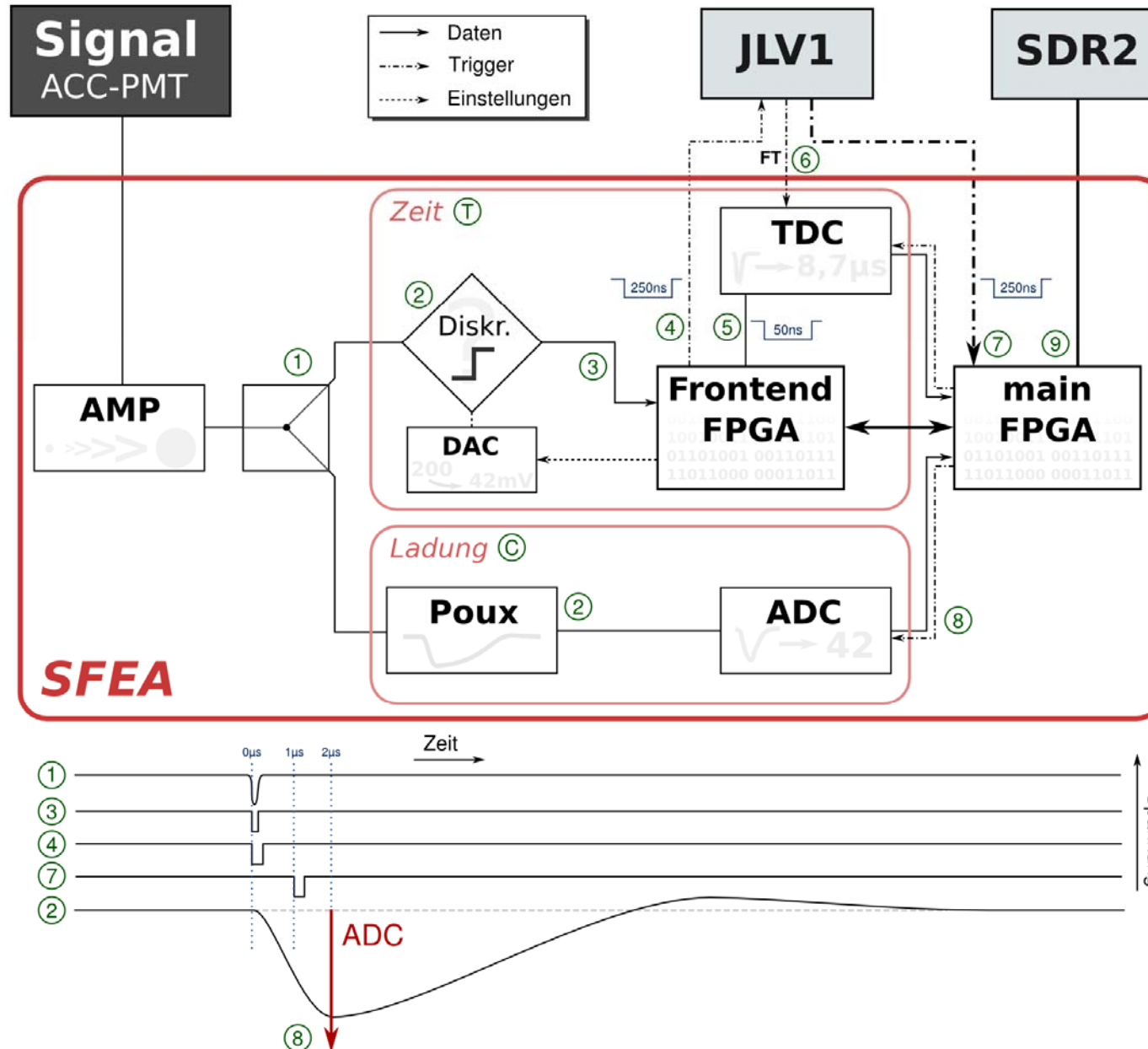
ACC DAQ Monitoring



Ch Chung, A. Goerres, Th. Kirn
I. Phys. Institute B,
KSC, 31st January 2011

RWTHAACHEN
UNIVERSITY

ACC Electronic Scheme:





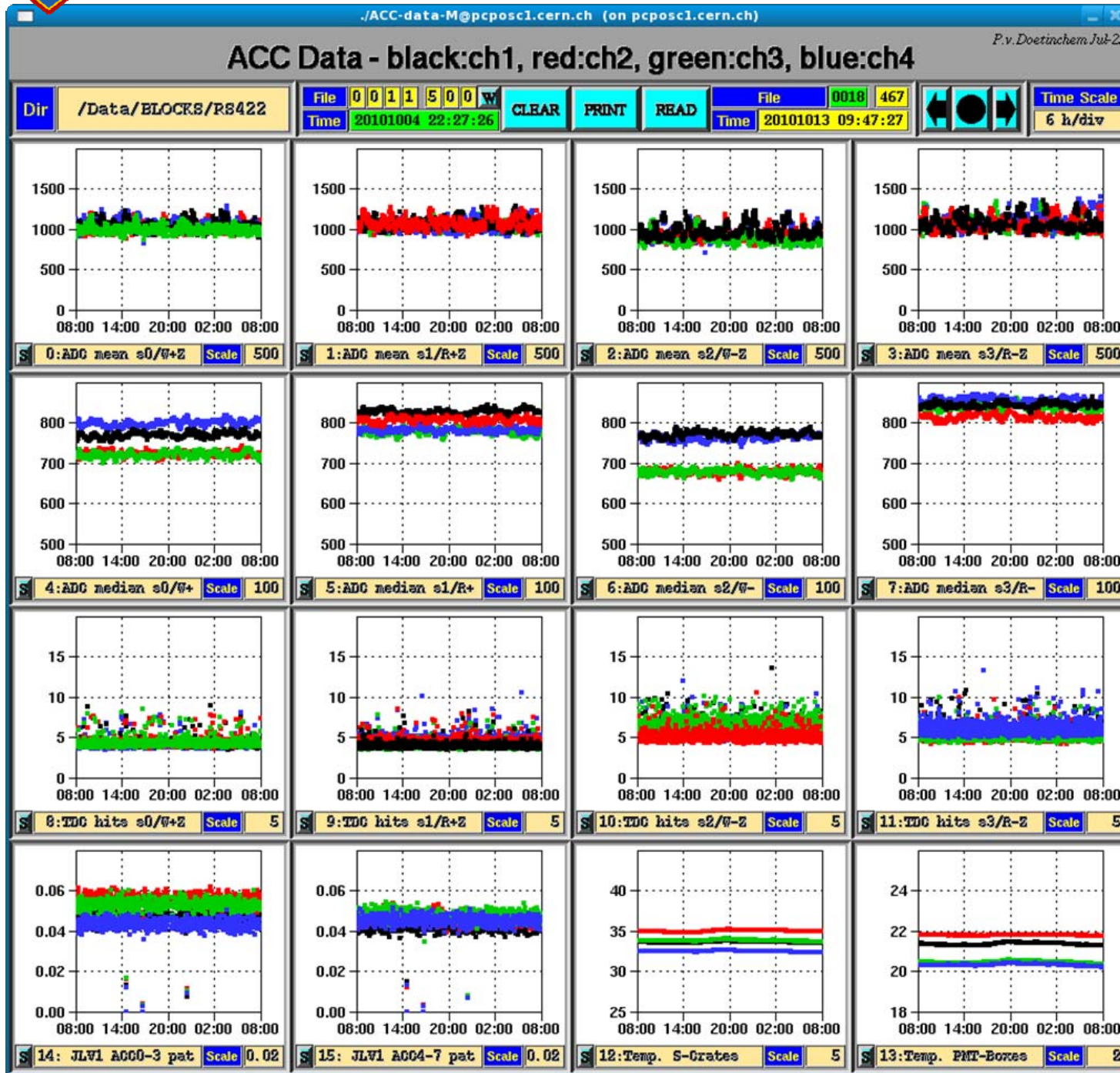
ACC DAQ Monitoring

History:

- Starting time: Cosmic Data Taking Period at CERN after
AMS-02 Pre-Integration May 200 by
Ph. v. Doetinchem, continued by A. Goerres
to be continued by Ch. Chung + Th. Kirn



ACC DAQ Monitoring Block-Files



Mean ADC values for each of the 4 PMTs of S0, S1, S2 and S3 crate

Median ADC values for each of the 4 PMTs of S0, S1, S2 and S3 crate

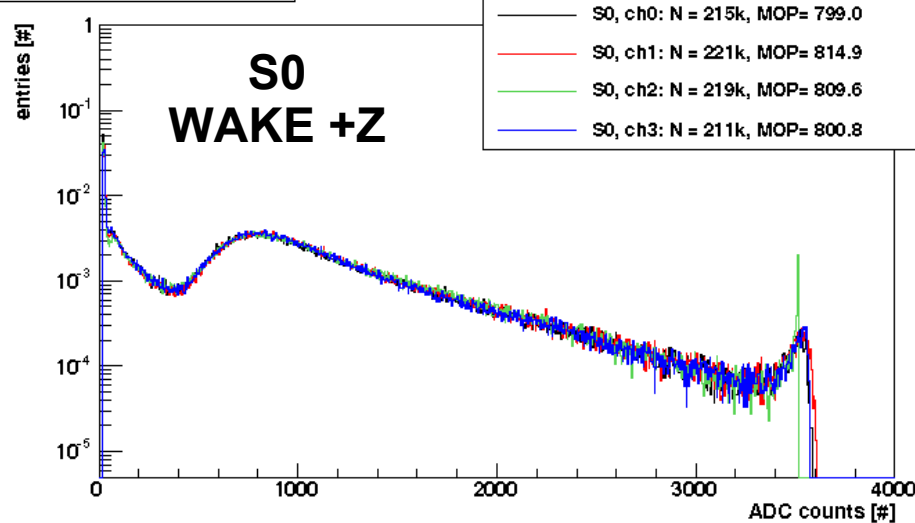
Number of TDC Hits for each of the 4 PMTs of S0, S1, S2 and S3 crate

mean JLV1 trigger pattern for each AND/OR of PMTs corresponding to one set; SFEA board temperature sensors, Global DALLAS sensors on each PMT box

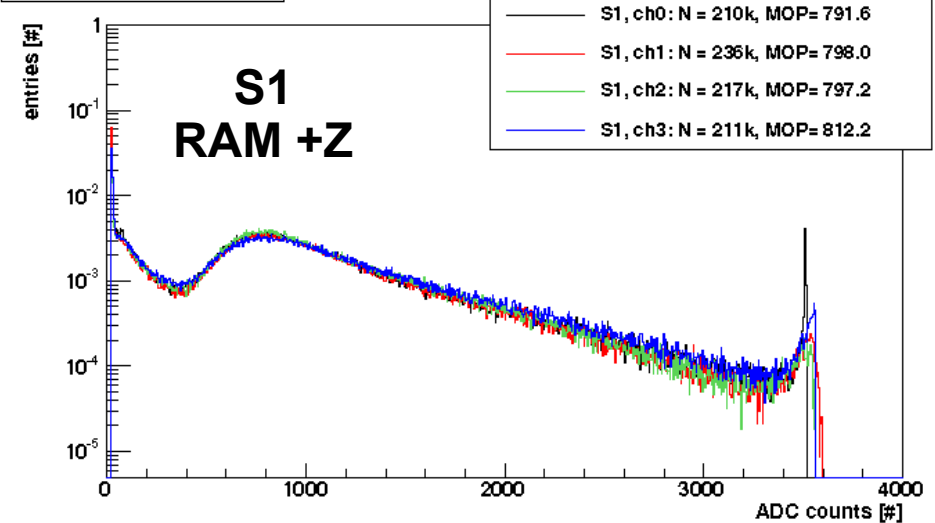
ADC Spectra (Cosmics, after calibration)

Andre Goerres
02-Nov-2010

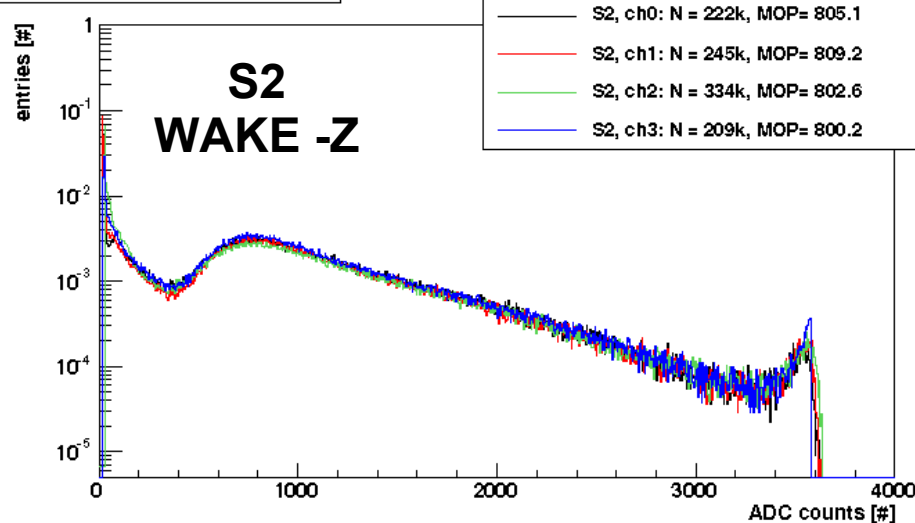
ADC for S0 (WAKE top)



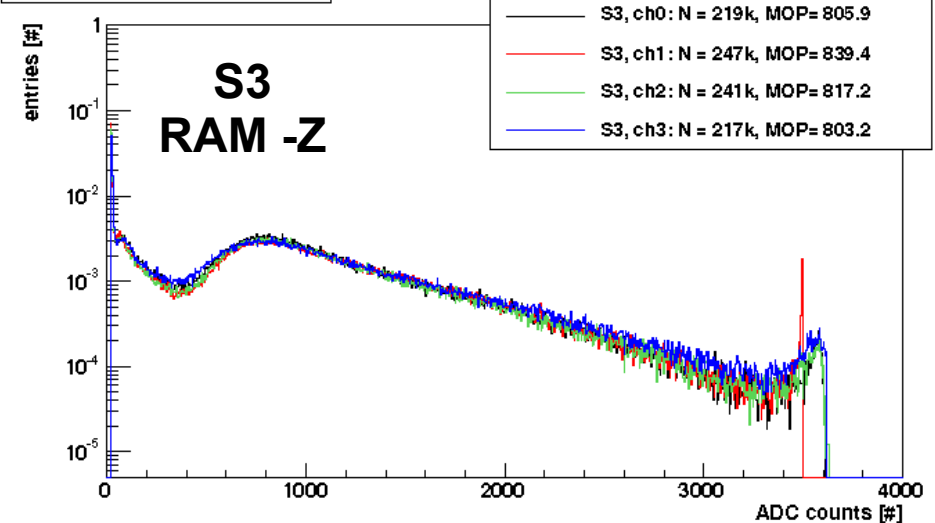
ADC for S1 (RAM top)



ADC for S2 (WAKE bottom)



ADC for S3 (RAM bottom)



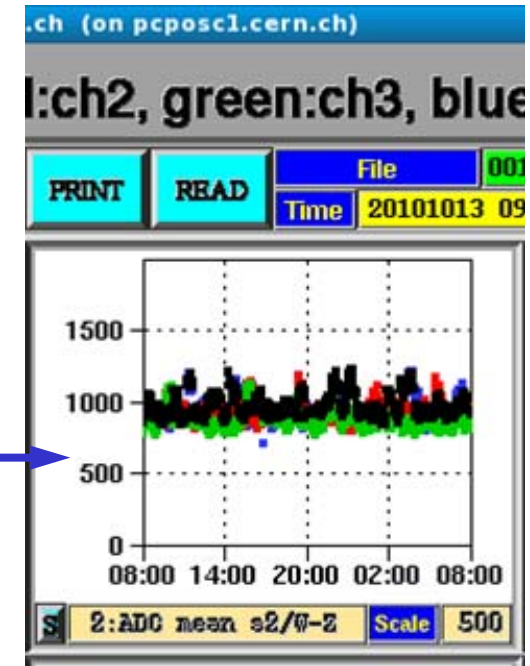
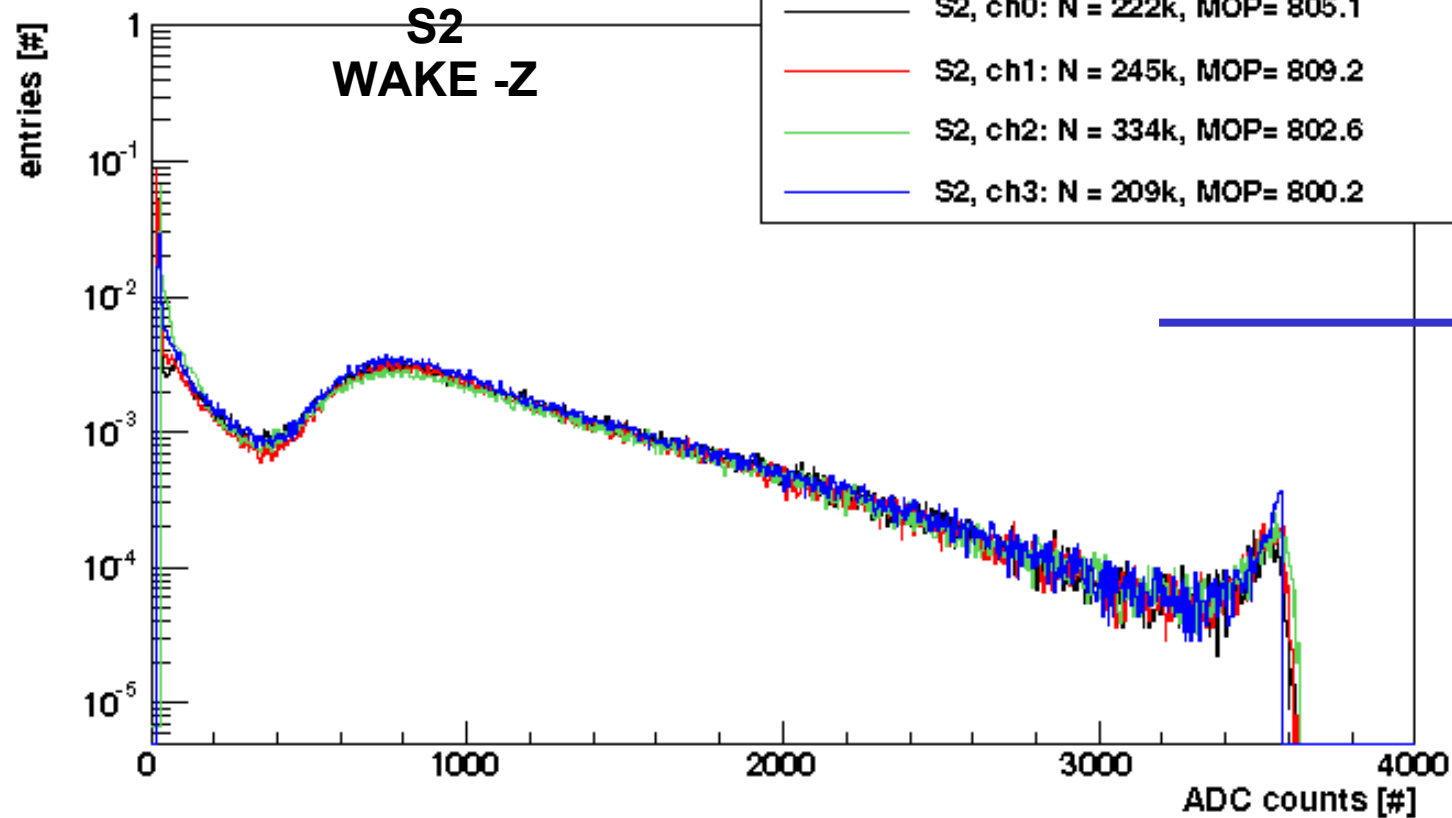
Black (SFEA2 input channel 0)

Green (SFEA2 input channel 2)

Red (SFEA2 input channel 1)

Blue (SFEA2 input channel 3)

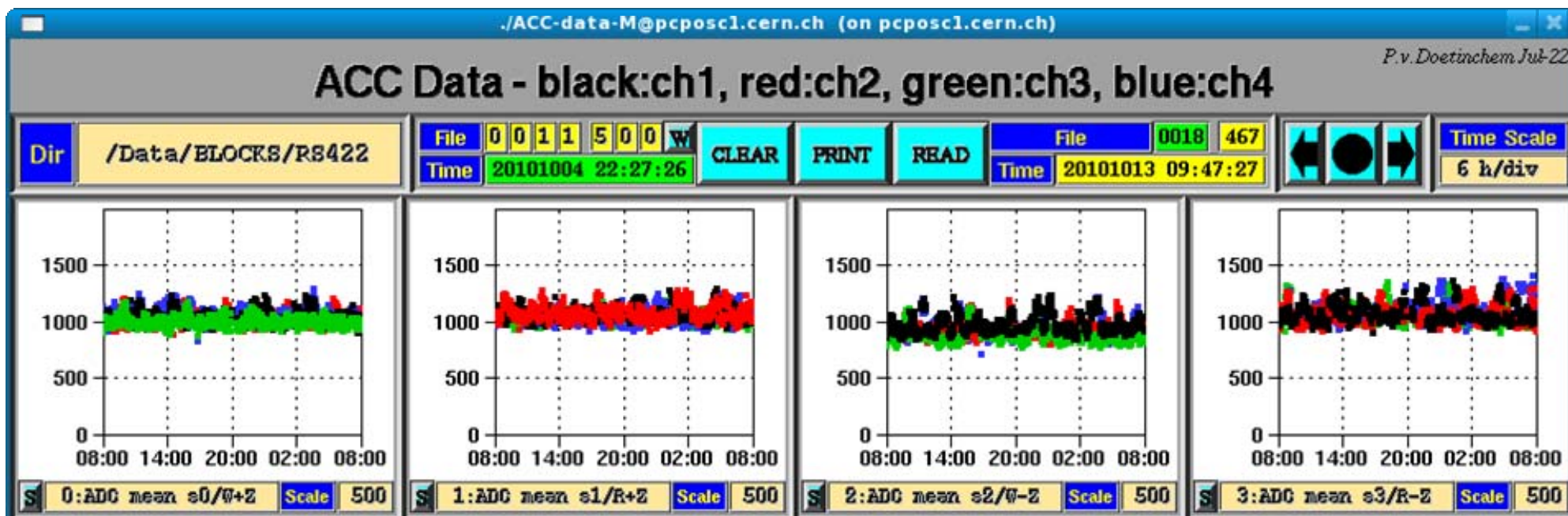
ADC for S2 (WAKE bottom)



Black (SFEA2 input channel 0)
Green (SFEA2 input channel 2)

Red (SFEA2 input channel 1)
Blue (SFEA2 input channel 3)

Mean ADC values for each of the 4 PMTs of S0, S1, S2 and S3 crate
Calculated out of 500 ADC values, not pedestal corrected



S0
WAKE +Z

S1
RAM +Z

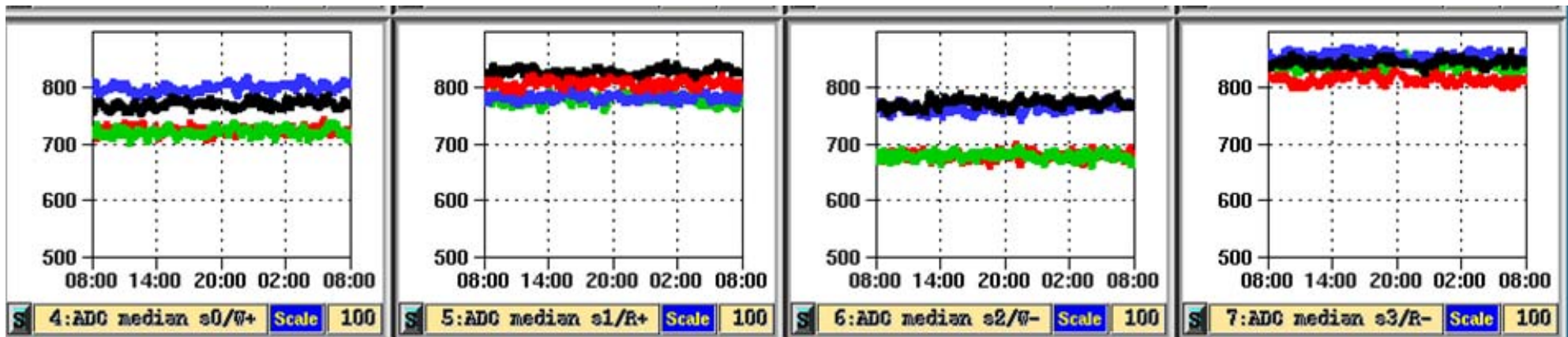
S2
WAKE -Z

S3
RAM -Z

Black (SFEA2 input channel 0)
Green (SFEA2 input channel 2)

Red (SFEA2 input channel 1)
Blue (SFEA2 input channel 3)

Median ADC values for each of the 4 PMTs of S0, S1, S2 and S3 crate
 Median value range 700 – 1000, ADC value range 300 – 2000,
 Running value: ADC value above median → median increase by 0.5
 ADC value below median → median decrease by 0.3



S0
WAKE +Z

S1
RAM +Z

S2
WAKE -Z

S3
RAM -Z

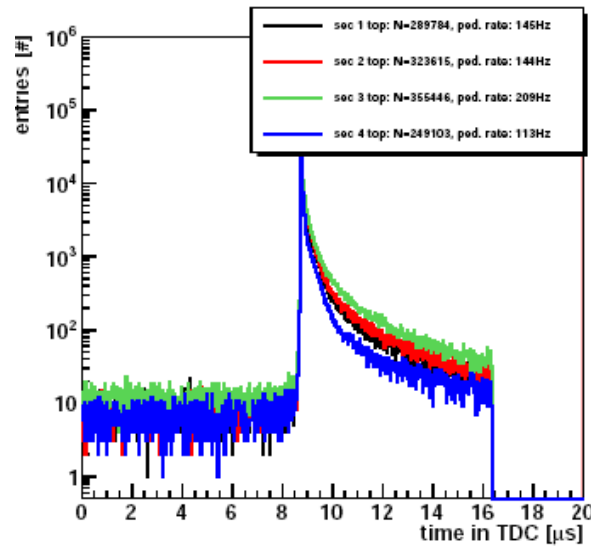
Black (SFEA2 input channel 0)

Green (SFEA2 input channel 2)

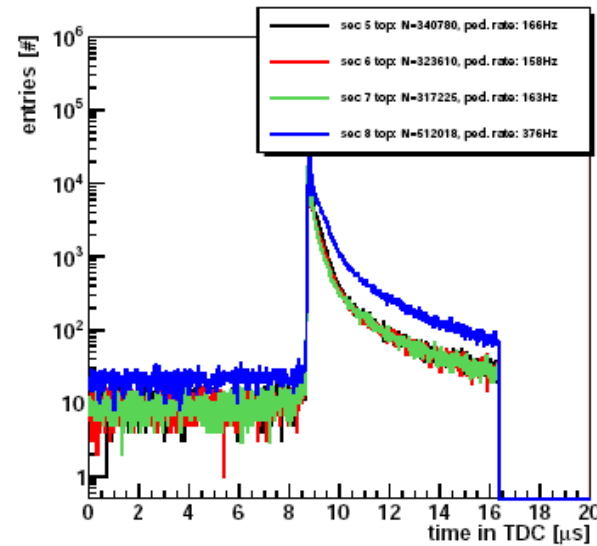
Red (SFEA2 input channel 1)

Blue (SFEA2 input channel 3)

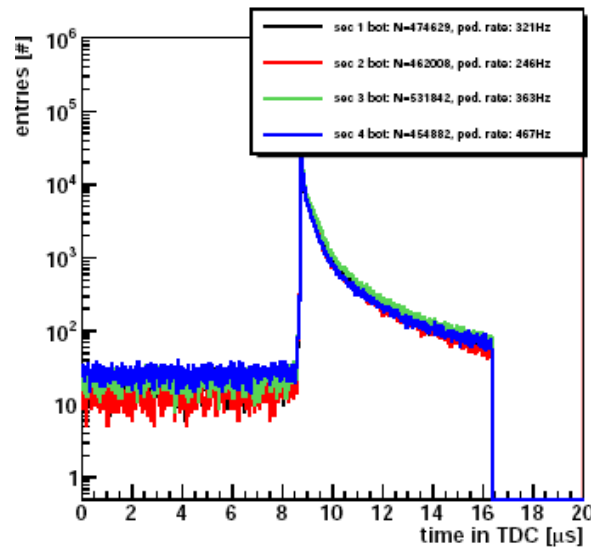
Raw Data: Stored time marks of discriminator transactions in TDC



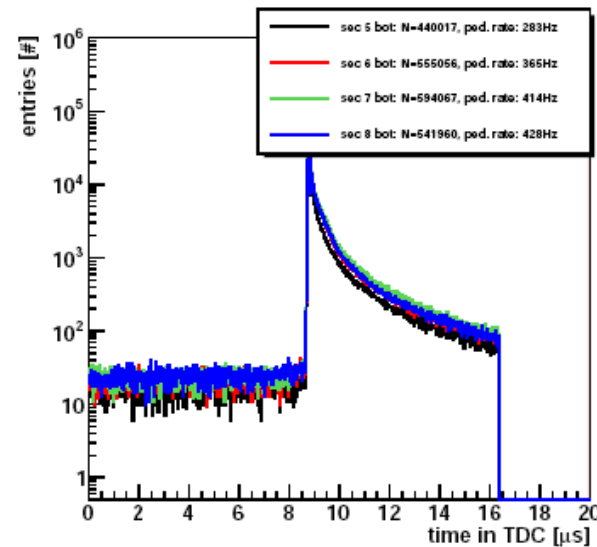
S0: WAKE



S1: RAM

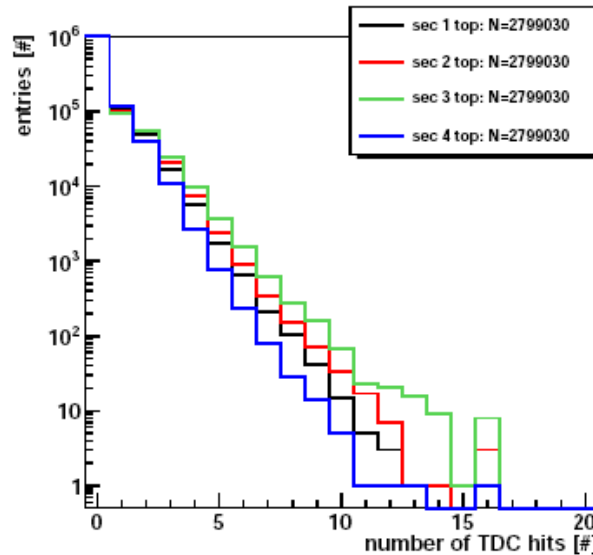


S2: WAKE

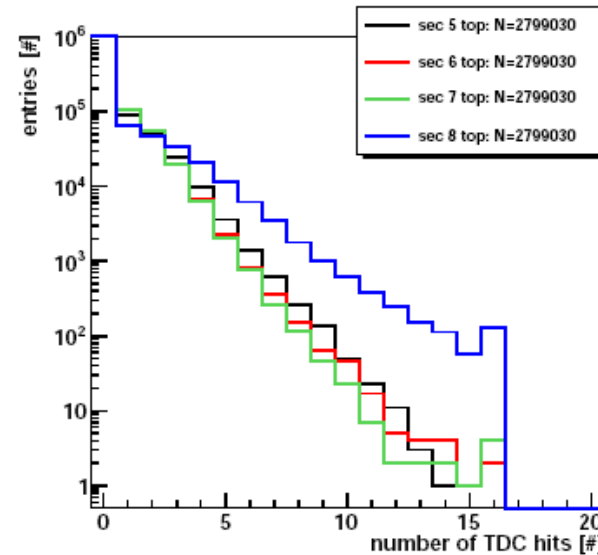


S3: RAM

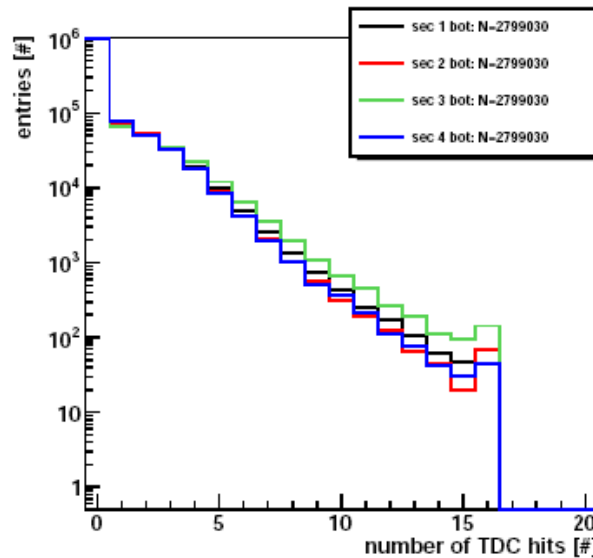
TDC: Discriminator threshold for all channels set to 200



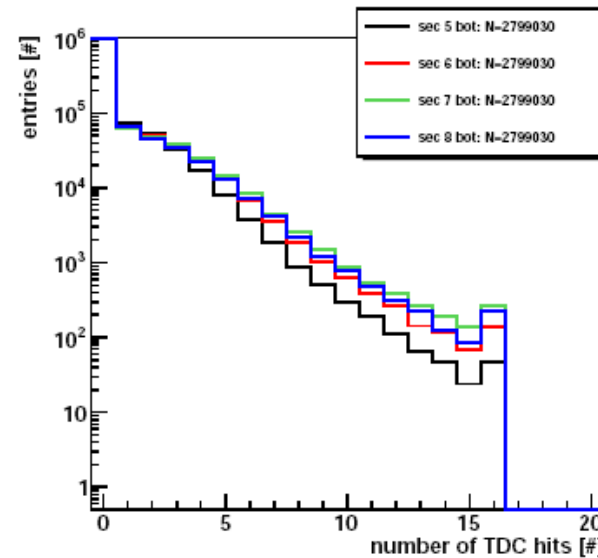
S0: WAKE



S1: RAM

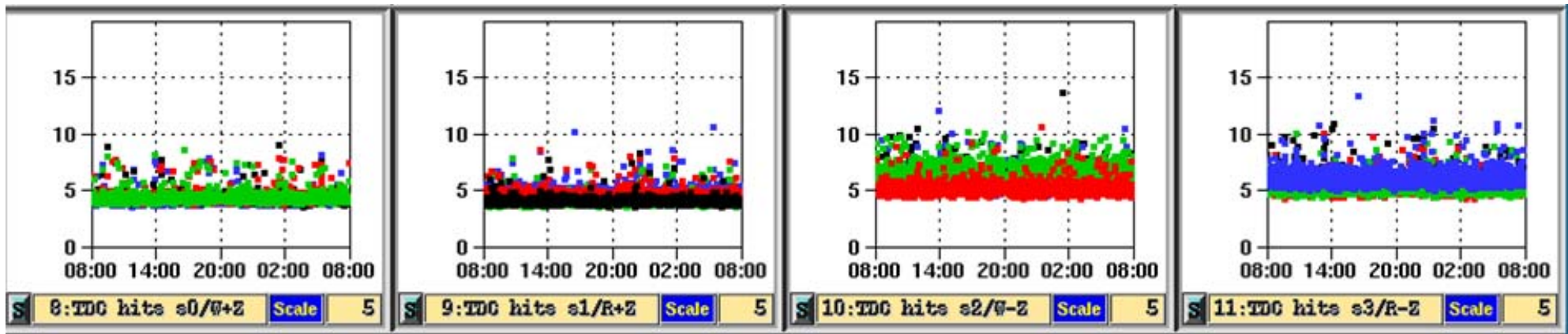


S2: WAKE



S3: RAM

Mean number of TDC Hits, averaged over 1500 entries



S0
WAKE +Z

S1
RAM +Z

S2
WAKE -Z

S3
RAM -Z

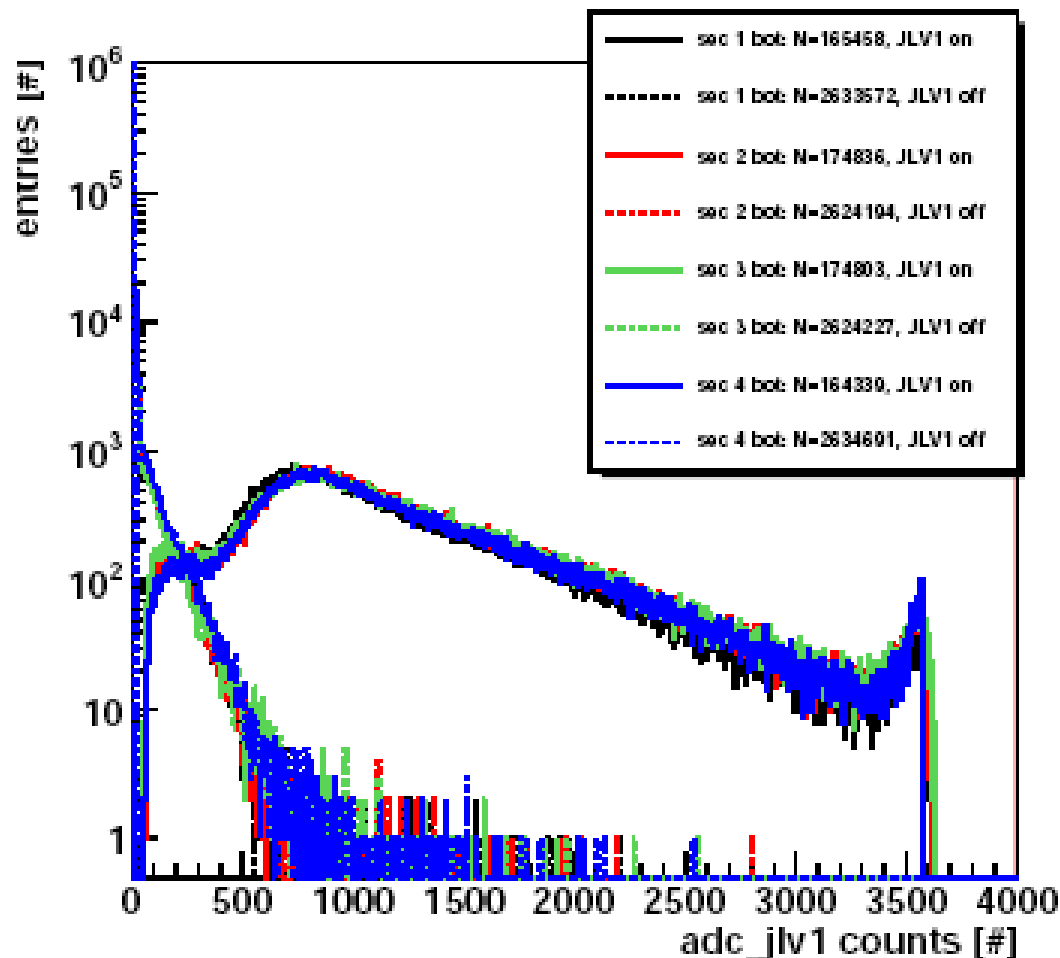
Black (SFEA2 input channel 0)

Green (SFEA2 input channel 2)

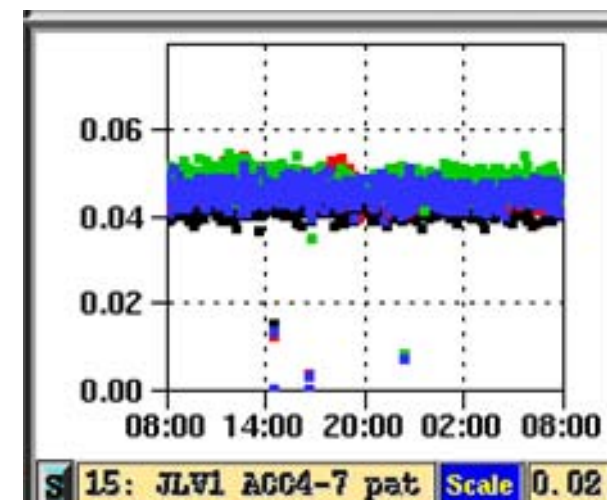
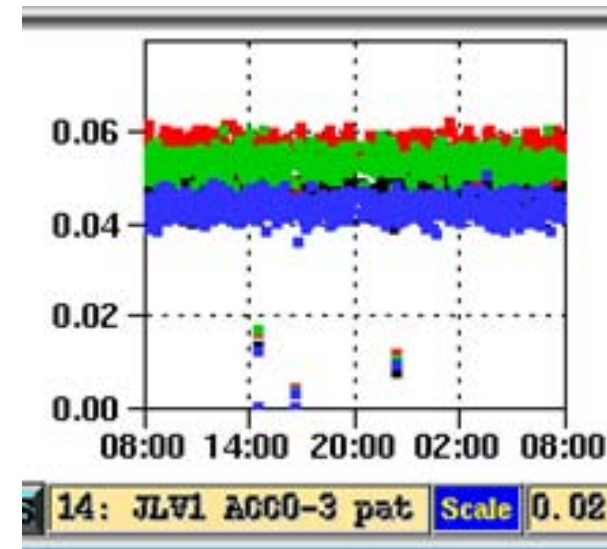
Red (SFEA2 input channel 1)

Blue (SFEA2 input channel 3)

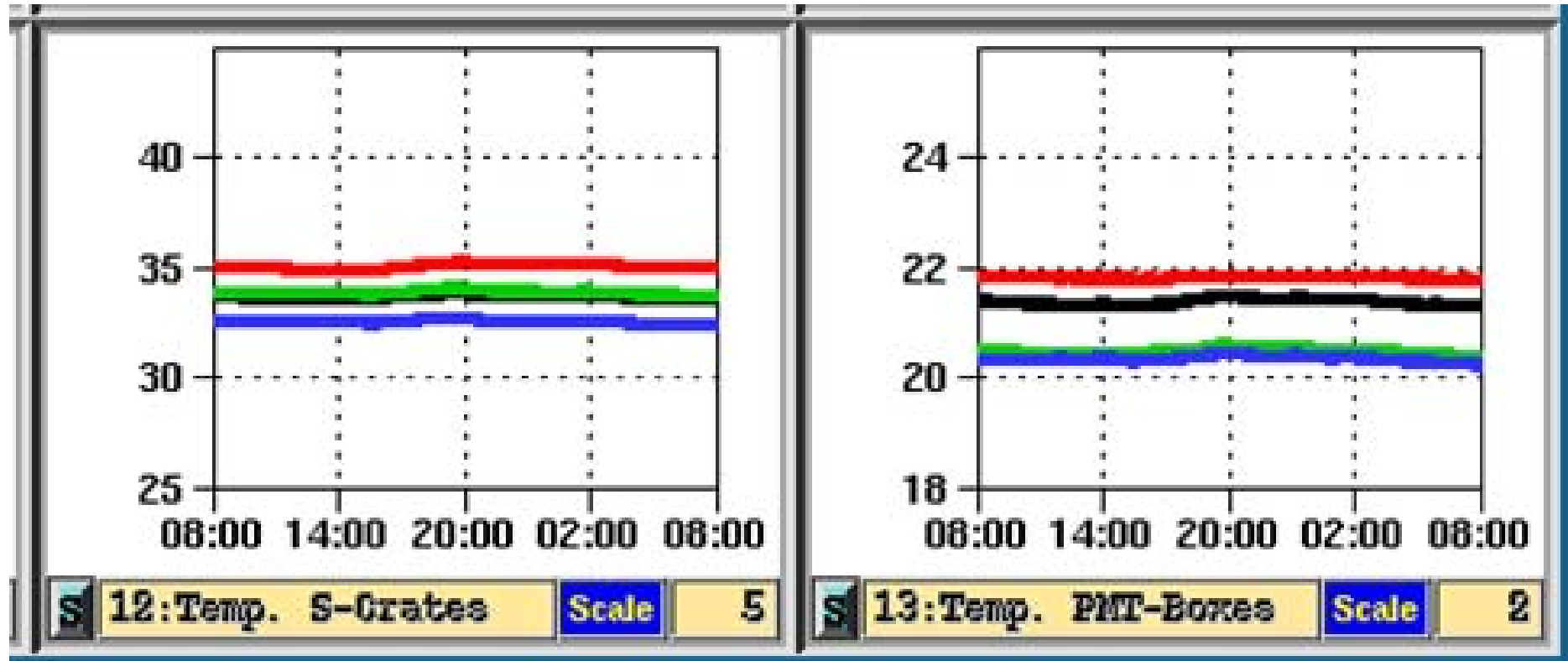
- JLV1-trigger: Percentage of events which get a veto-flag
- ADC values as a function of the corresponding JLV1 pattern
- events with JLV1 off pattern for certain PMT contribute $\sim 10\%$ at 500 ADC counts and $\sim 0.1\%$ at 1000 ADC counts at threshold 200



S2: WAKE



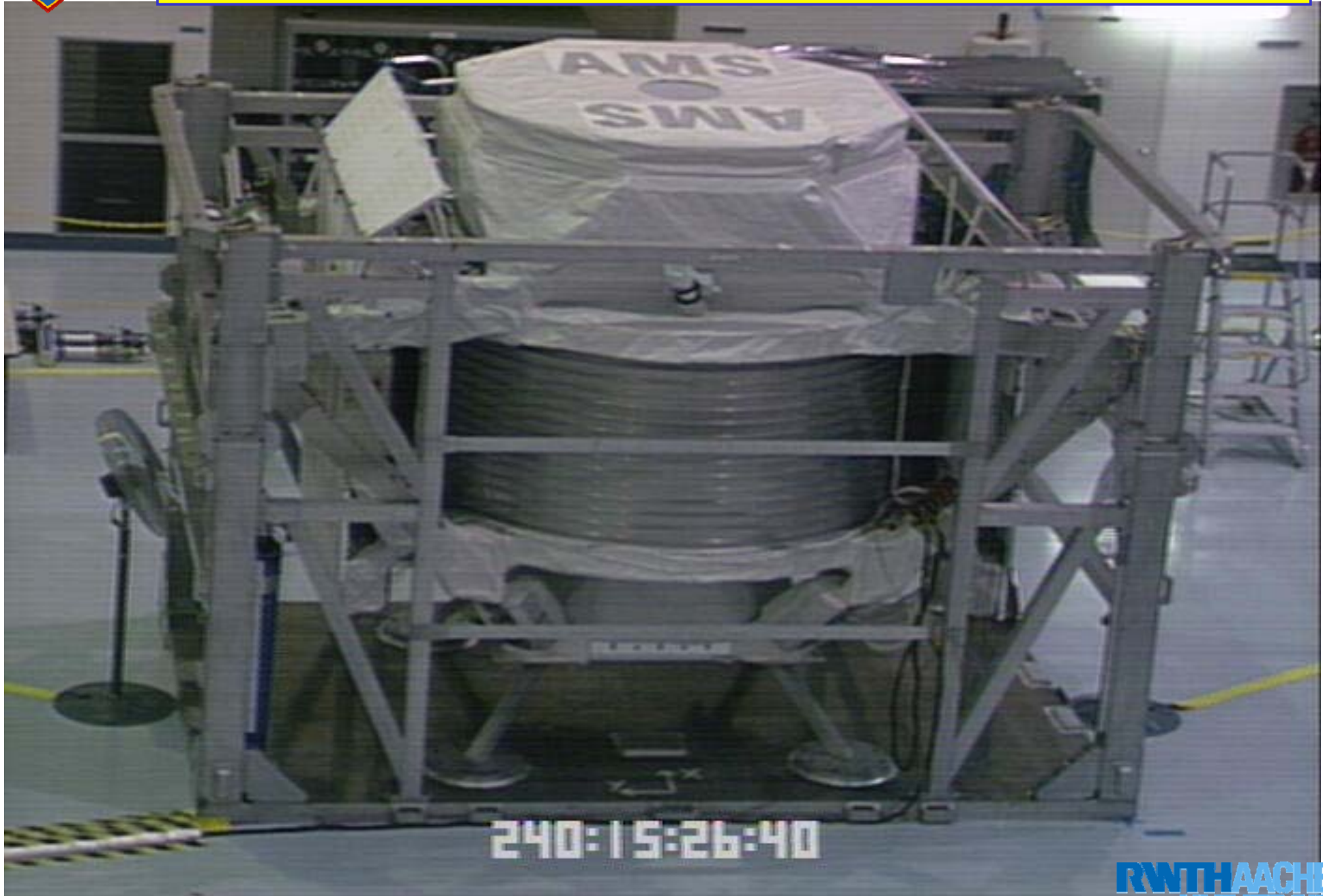
Temperature Sensors S-crates, Temperature Sensors on PMT-boxes



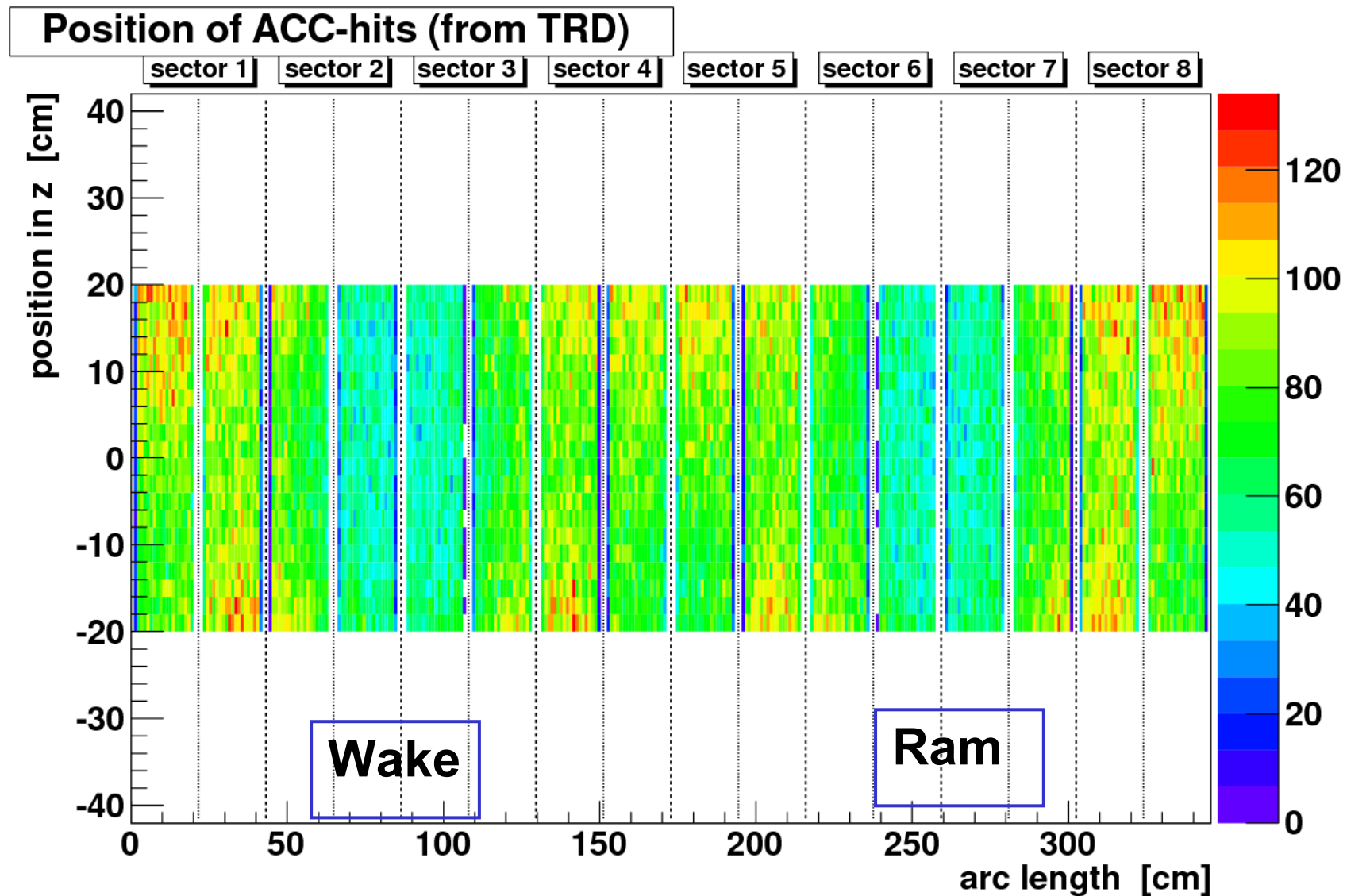
Operational: -30°C ... +45°C
Non-Operational: -35°C ... +50°C



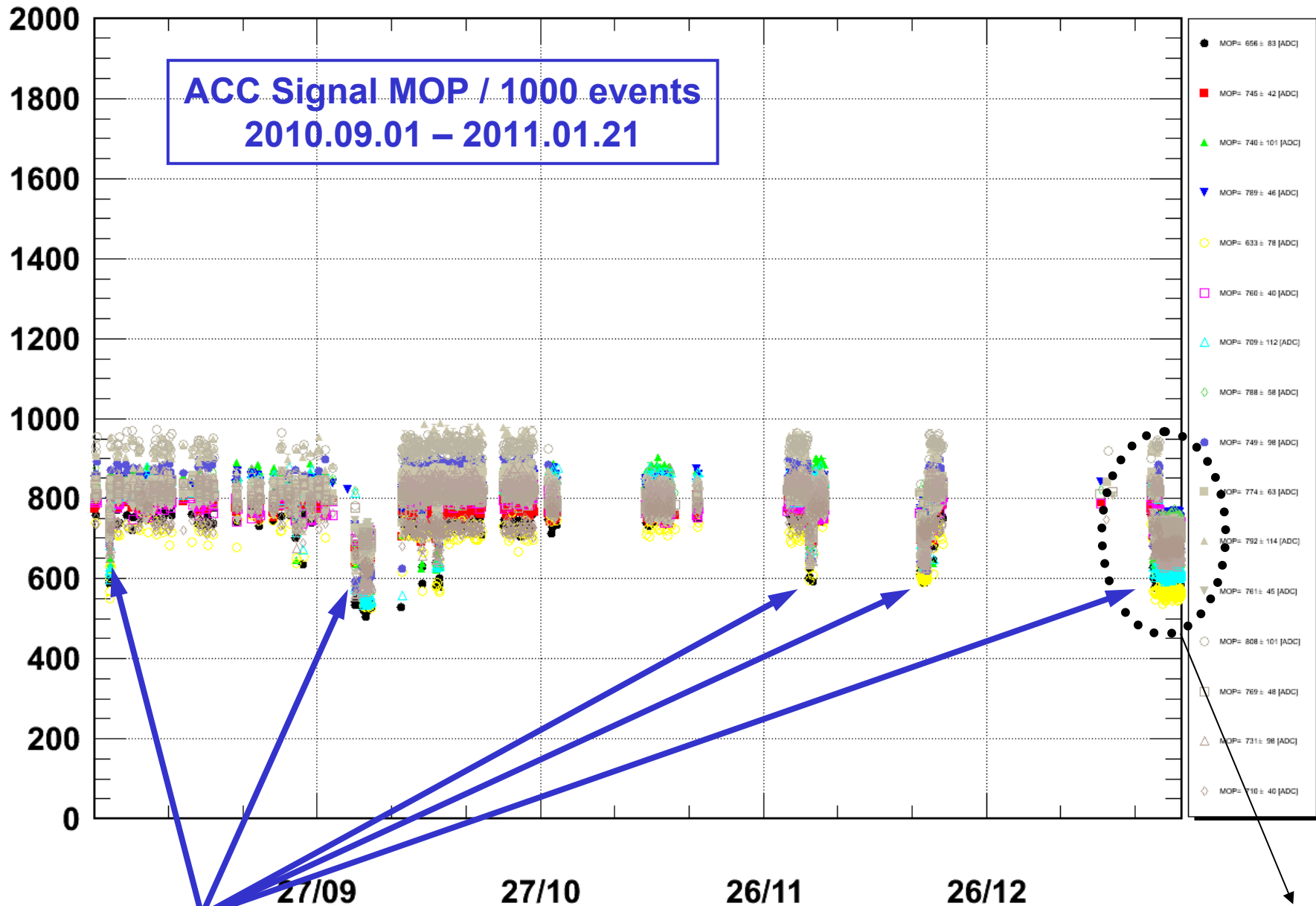
2010 KSC Cosmic Data Period → ACC Stability



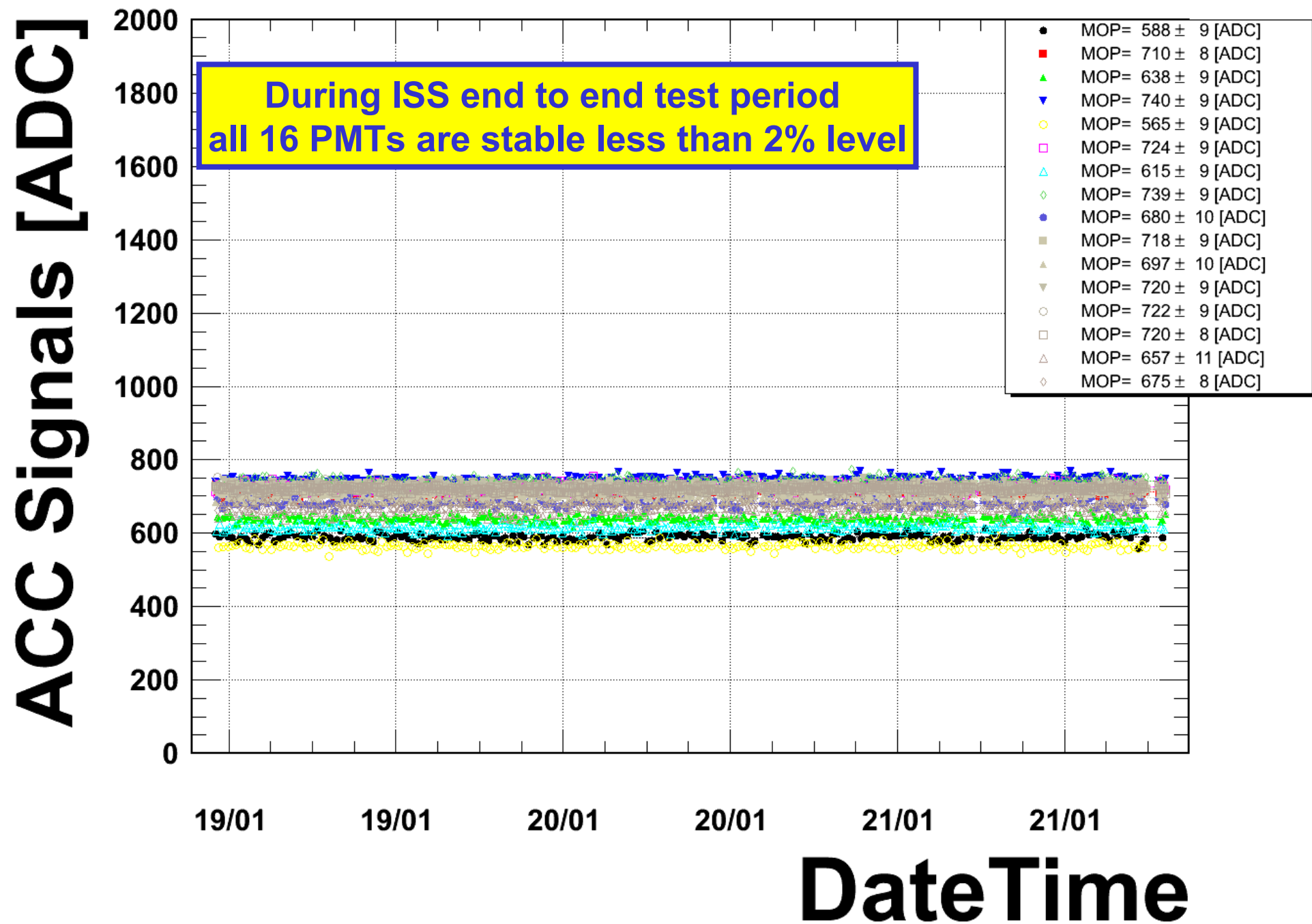
- TRD-track for prediction of ACC-hit
- only the center of panel is taken into account

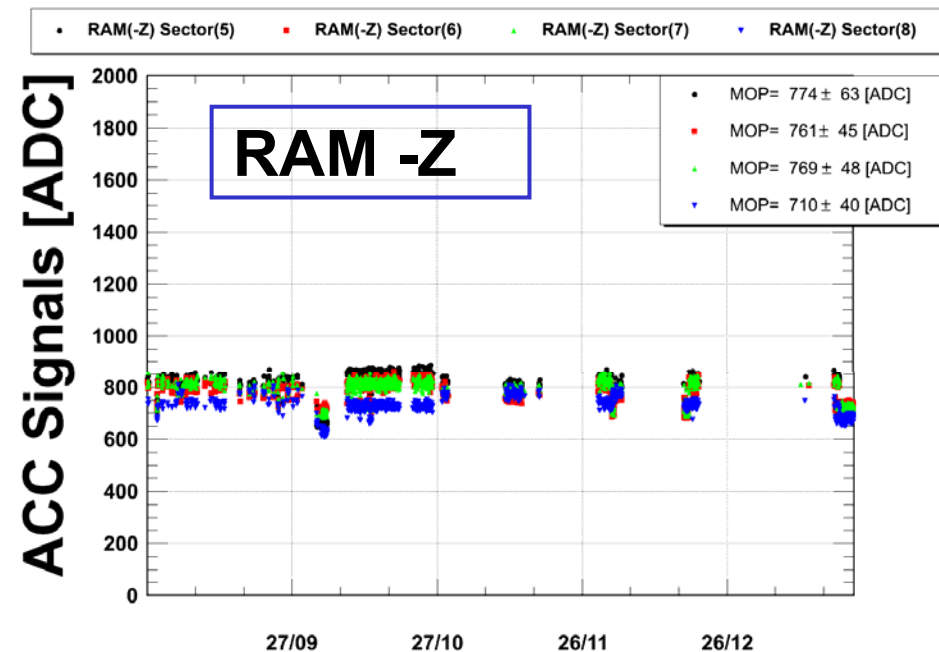
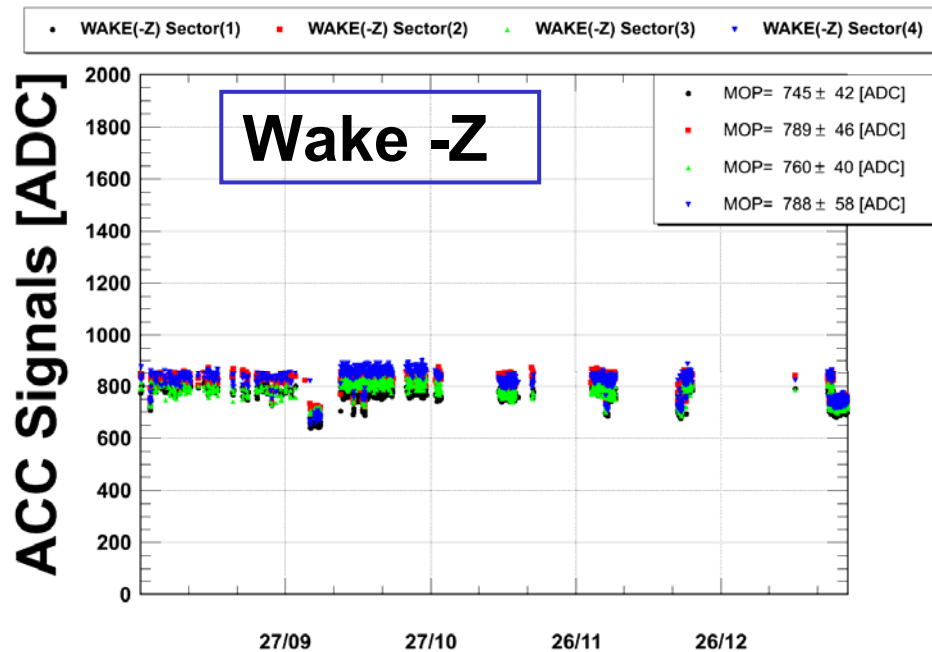
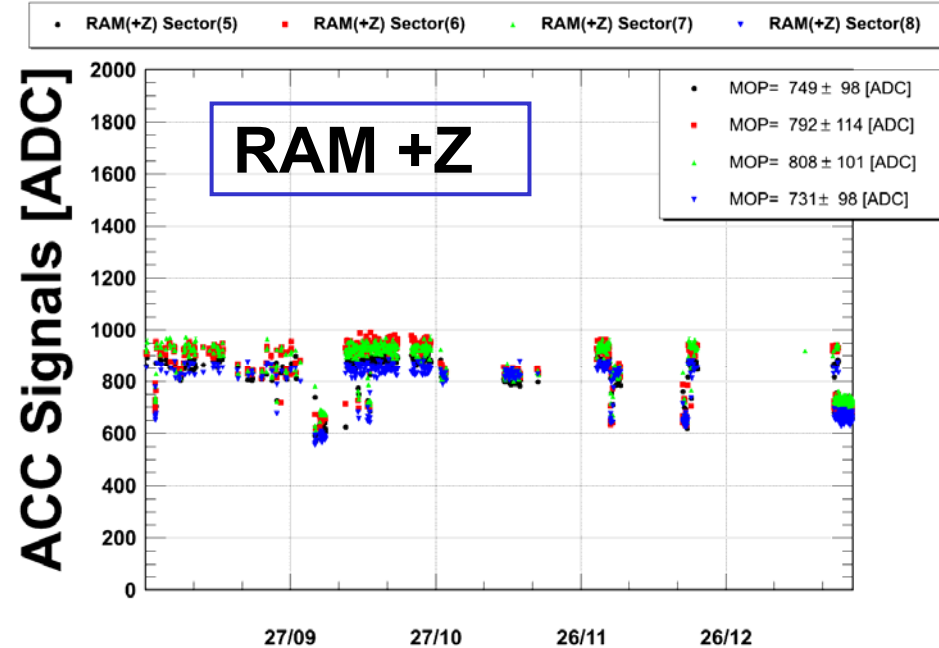
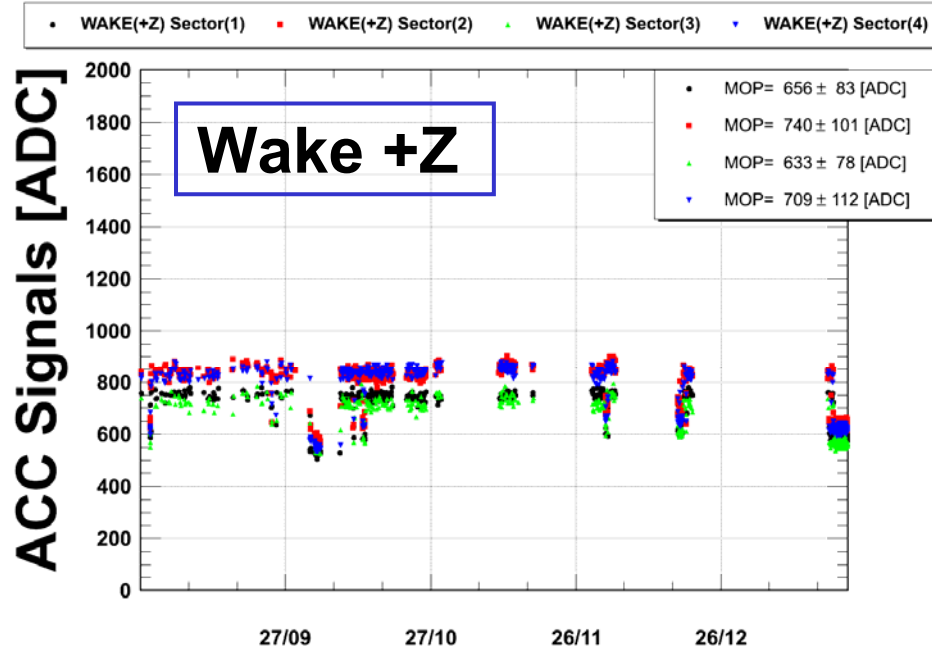


ACC Signals [ADC]



Zoom ..





DateTime

DateTime