

AMS Software Review

ACC Slow Control

Monitoring



Ch Chung, A. Goerres,

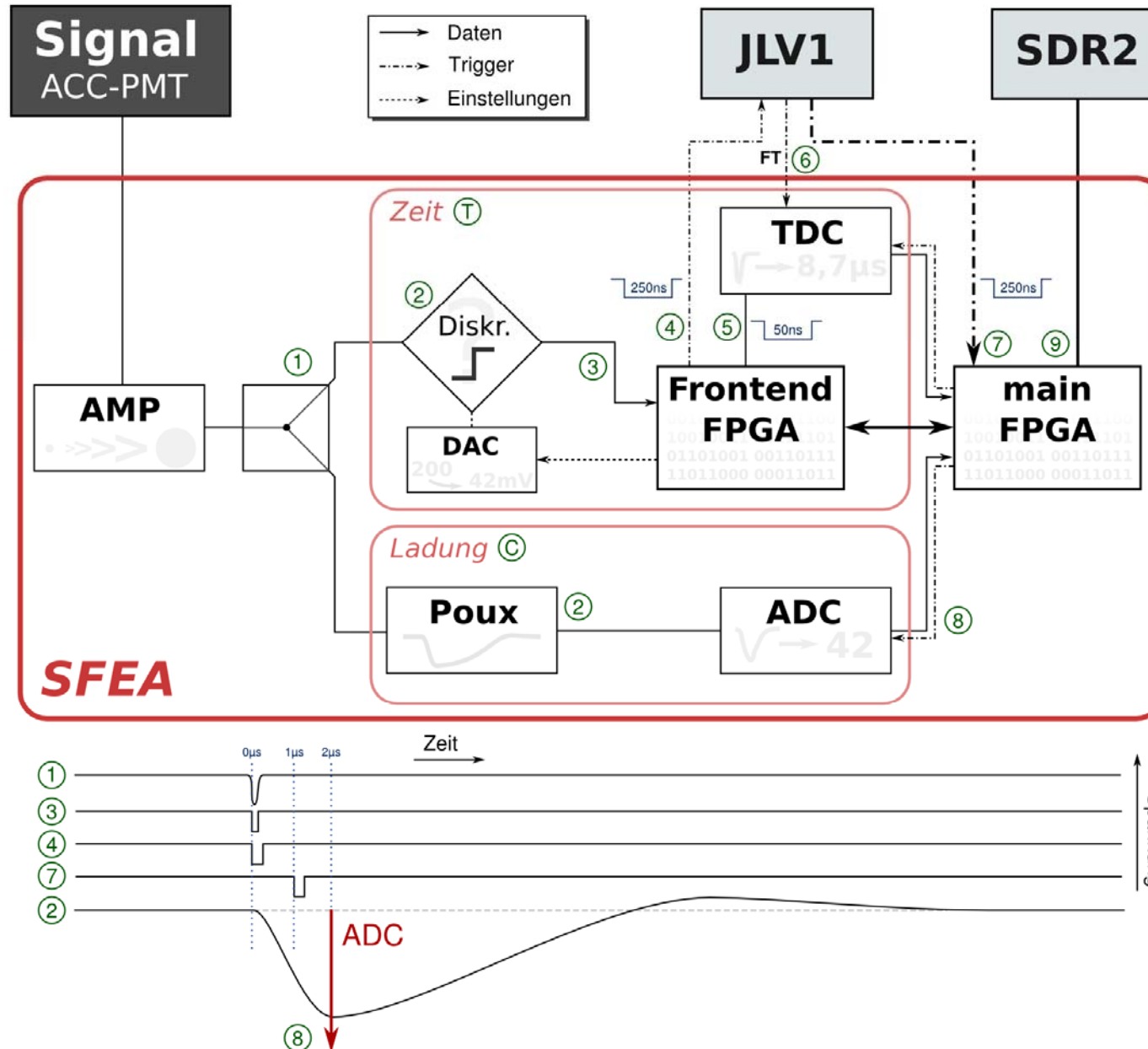
Th. Kirn

I. Phys. Institute B,
KSC, 31st January

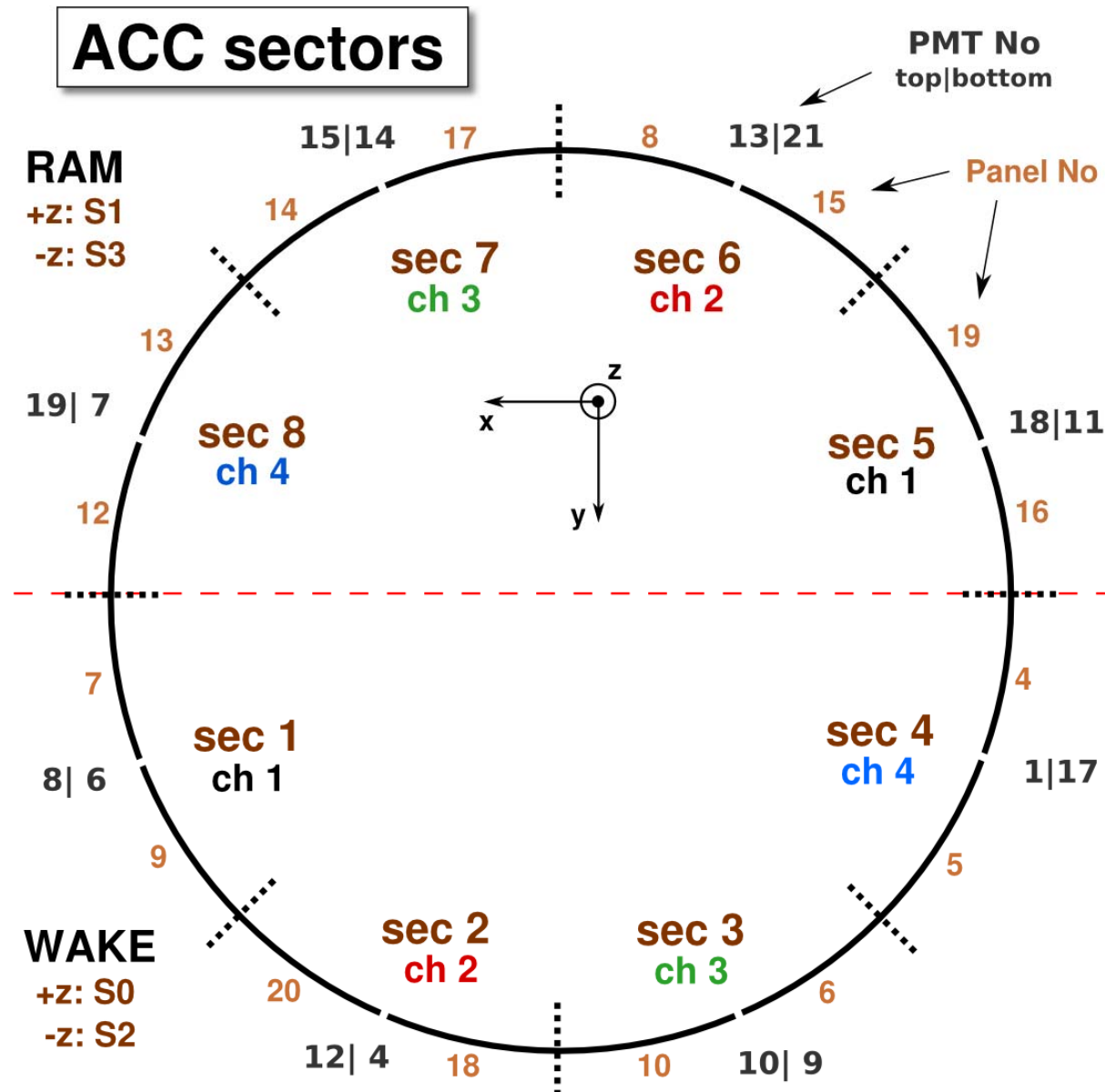
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2011

ACC Electronic Scheme:



ACC scintillator panel and PMT positions:





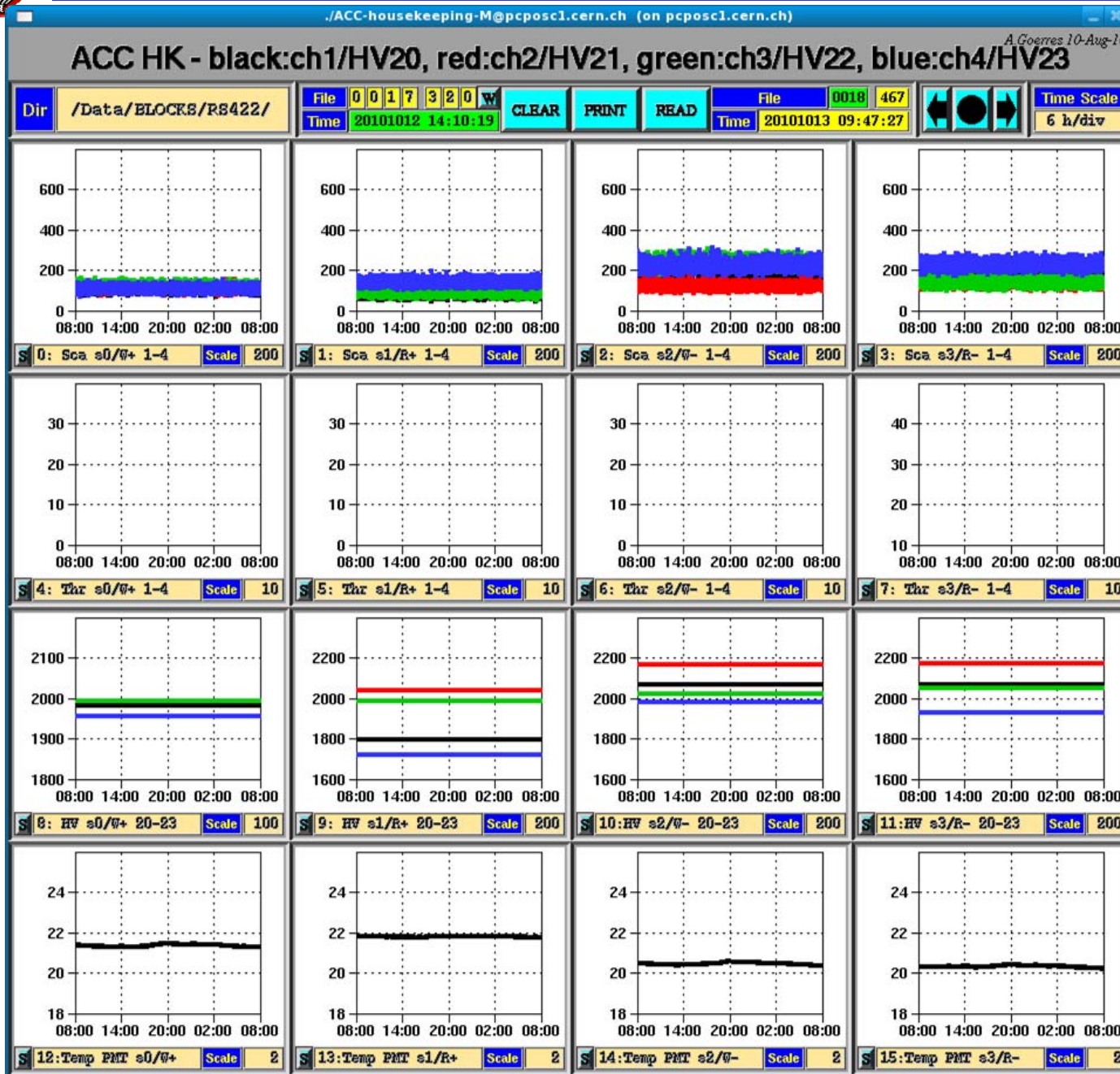
ACC Slow Control Monitoring

History:

- Starting time: Cosmic Data Taking Period at CERN after
AMS-02 Pre-Integration May 2008
- Starting point: Adaption of Alexei Lebedevs Basic Code to
ACC Slow Control Monitoring Code by
Ph. v. Doetinchem, continued by A. Goerres
to be continued by Ch. Chung + Th. Kirn



ACC Slow Control Monitoring Housekeeping Data



Scalar rates of 4 PMTs
of S0, S1, S2 and S3
crate

PMT Discriminator
threshold settings;
Deactivated, all register
values set to 200 (Max.)

PMT Voltages

Global DALLAS
Temperature sensors
on PMT boxes

S0
WAKE +Z

S1
RAM +Z

S2
WAKE -Z

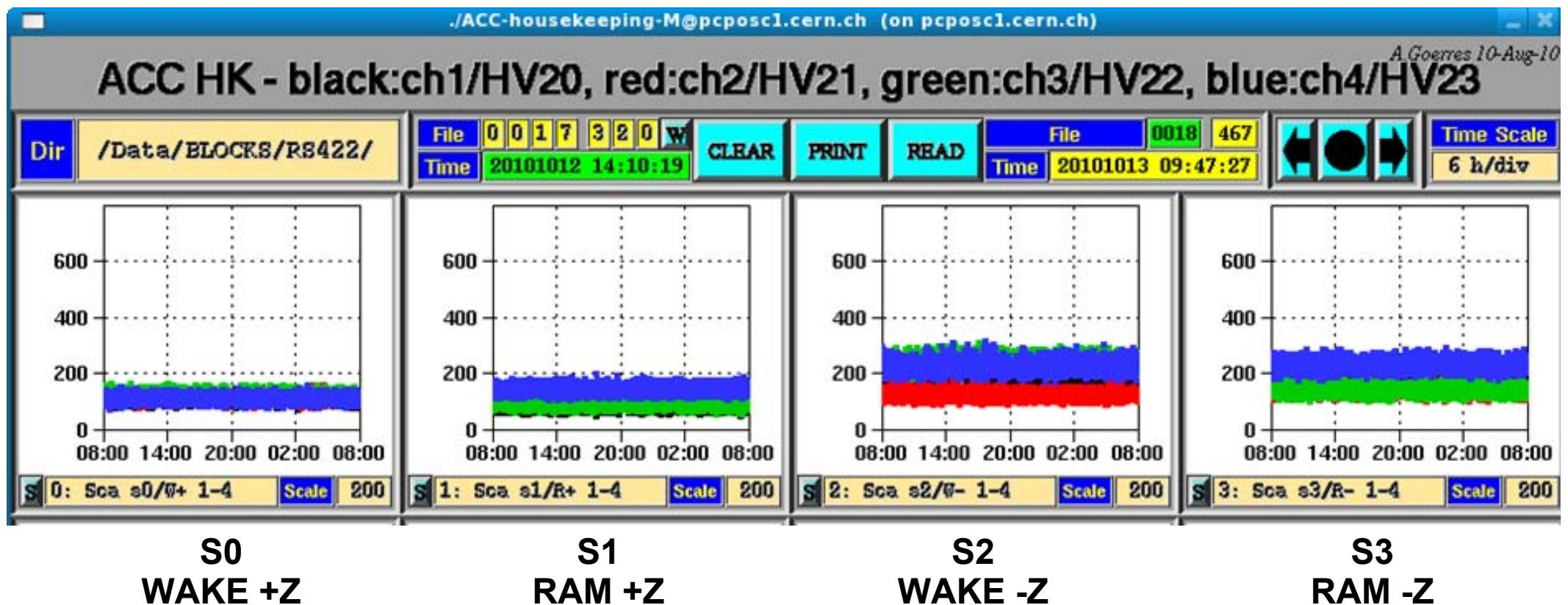
S3
RAM -Z

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ACC Slow Control Monitoring Housekeeping Data

Scalar rates of 16 ACC PMTs



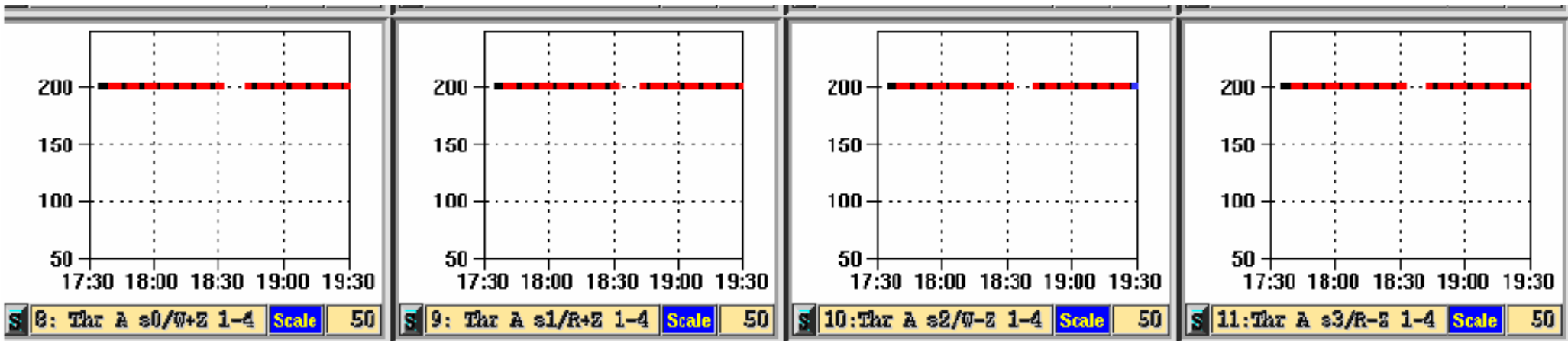
Black (SFEA input channel 0)
Green (SFEA input channel 2)

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



ACC Slow Control Monitoring Housekeeping Data

Discriminator threshold settings; all register values set to 200 (Maximum)



S0
WAKE +Z

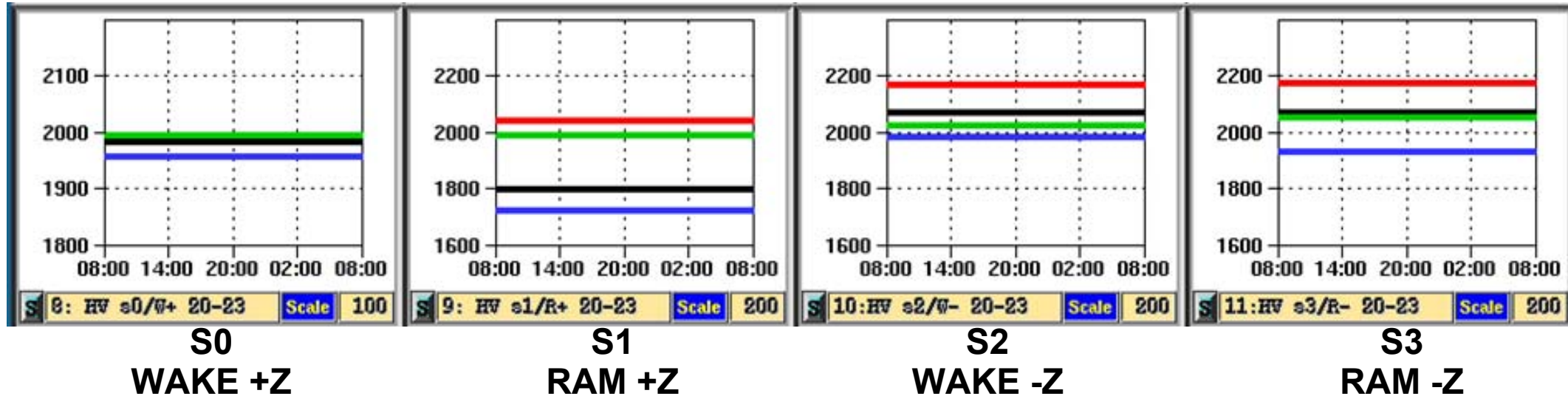
S1
RAM +Z

S2
WAKE -Z

S3
RAM -Z

ACC Slow Control Monitoring Housekeeping Data

High voltage settings of 16 PMTs of S0, S1, S2 and S3-crate

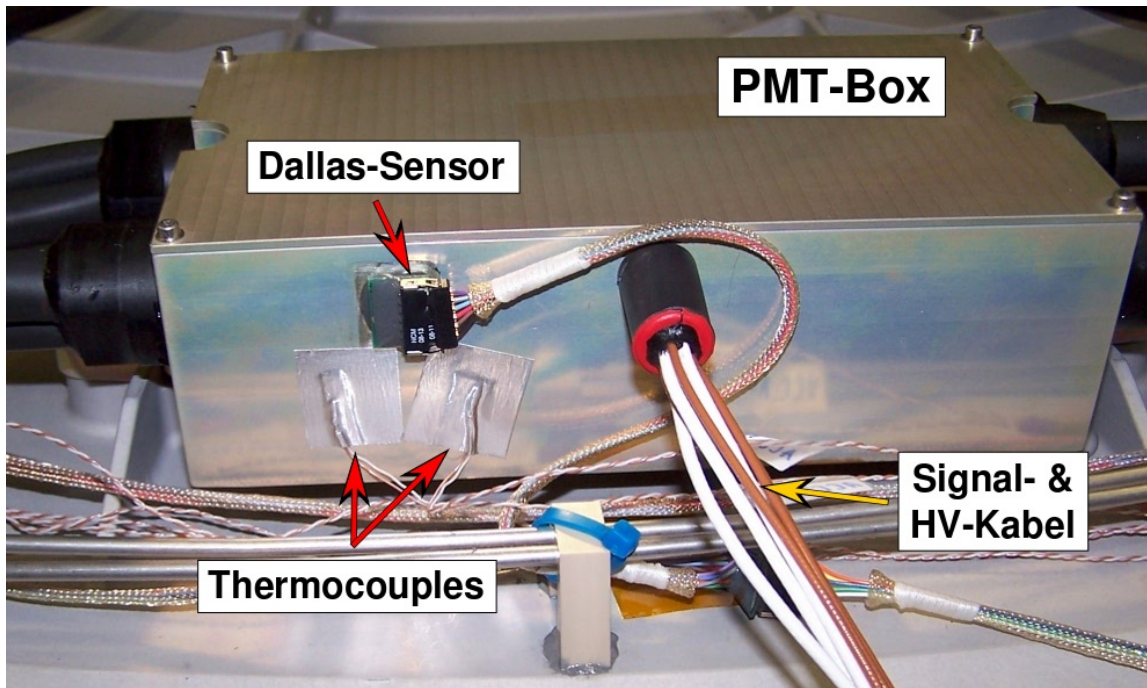


Black (SFEA input channel 0)
Green (SFEA input channel 2)

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

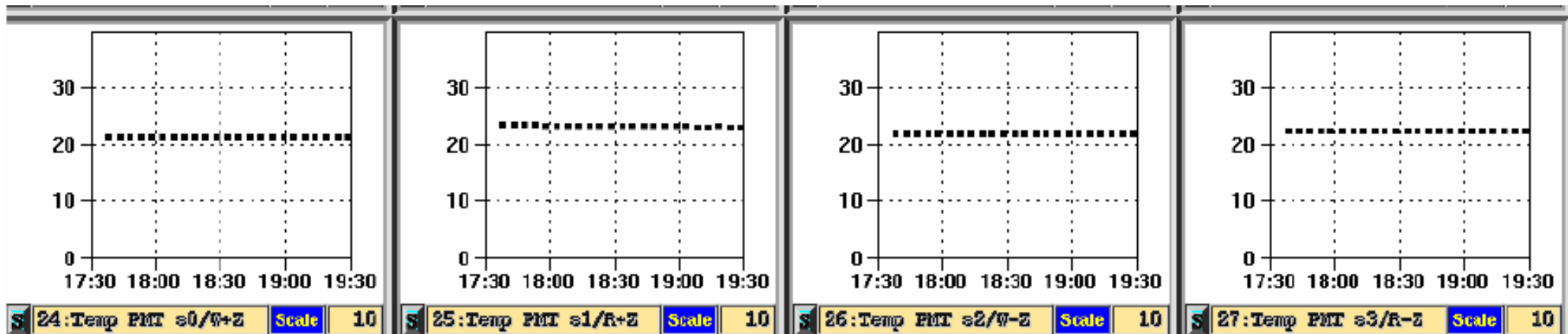
SHV-brick	S0	S1	S2	S3
Ch20	1981 V	1799 V	2069 V	2069 V
Ch21	1956 V	2040 V	2169 V	2173 V
Ch22	1994 V	1989 V	2022 V	2051 V
Ch23	1956 V	1723 V	1983 V	1931 V

ACC Slow Control Monitoring Housekeeping Data



Global DALLAS Temperature sensor
on each ACC PMT box

Operational: $-30^{\circ}\text{C} \dots +45^{\circ}\text{C}$
Non-Operational: $-35^{\circ}\text{C} \dots +50^{\circ}\text{C}$



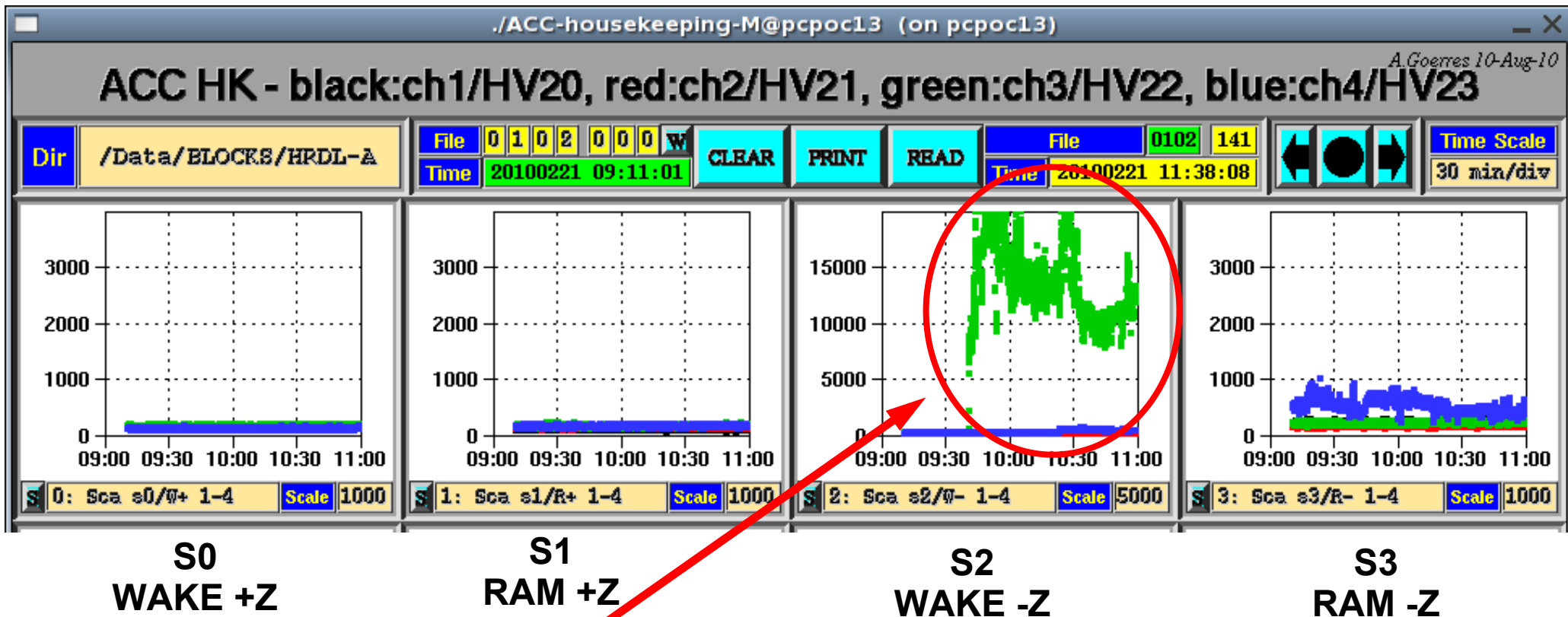
S0
WAKE +Z

S1
RAM +Z

S2
WAKE -Z

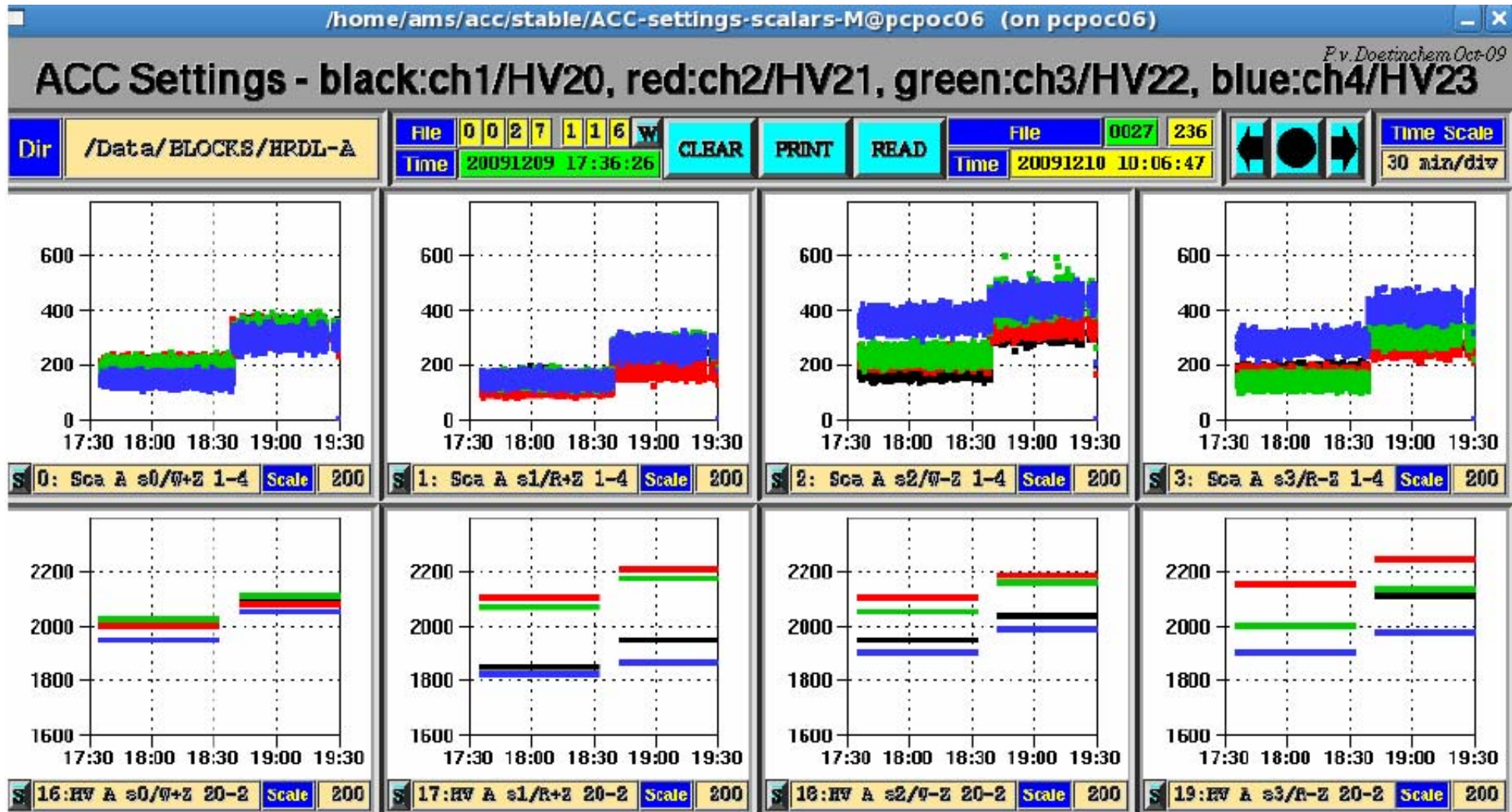
S3
RAM -Z

ACC Slow Control Monitoring Housekeeping Data – Trouble Shooting



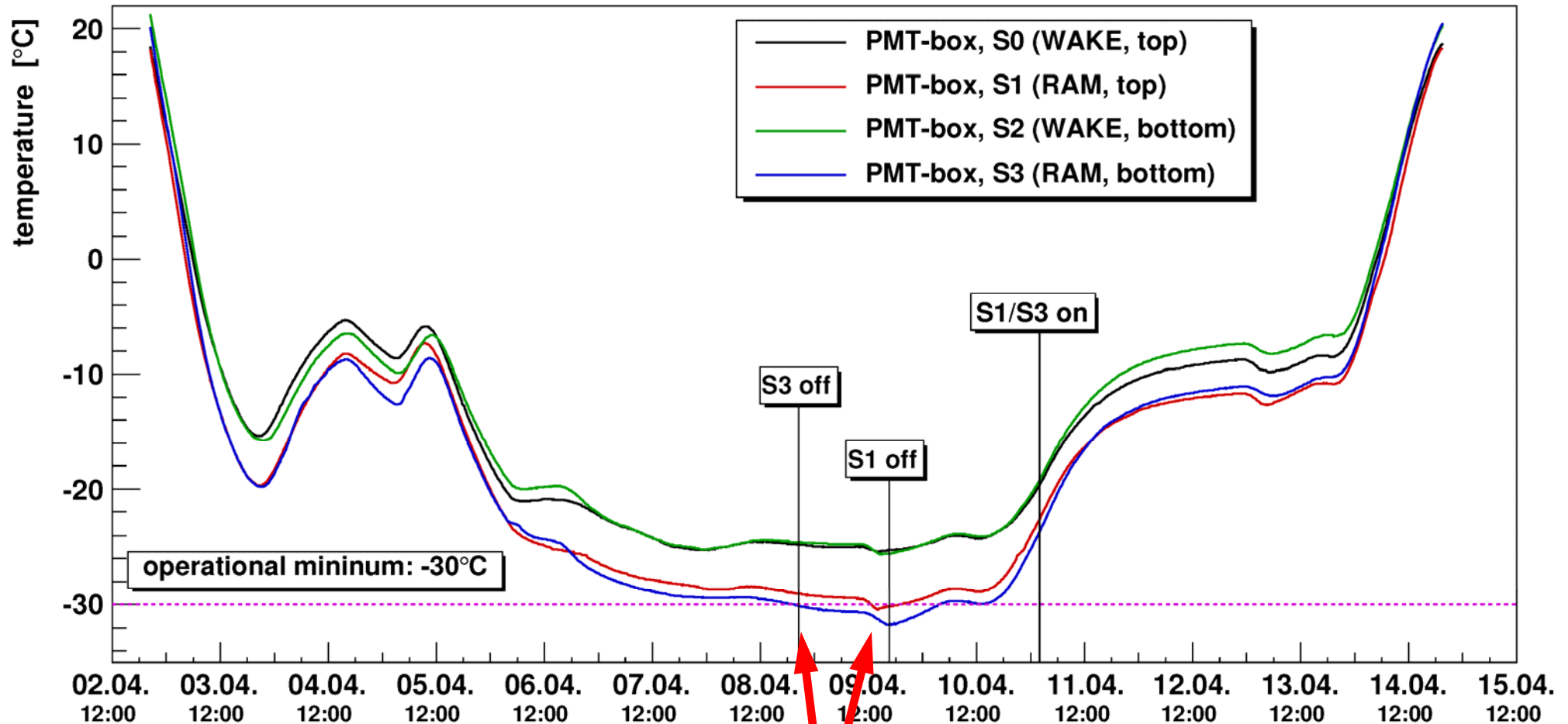
Scaler rising; Saturation at 32k, Check: HV, threshold, Trigger config.
Due to noisy PMT → lower HV
(PMT scaler rate after flight integration → Exchange)

ACC Slow Control Monitoring Housekeeping Data – Trouble Shooting



Scaler increase (stepwise) due to change of HV settings (or trigger config)
Scaler at zero → HV off?

ACC Slow Control Monitoring Housekeeping Data – Troubleshooting



Temperature below operational range → HV off!