SiPM evolution.

The long time evolution of SiPMs has been studied for three periods : July 2007, May 2008 and July 2008 . Data of 72 runs have been used , 24 runs in each month.

Summary:

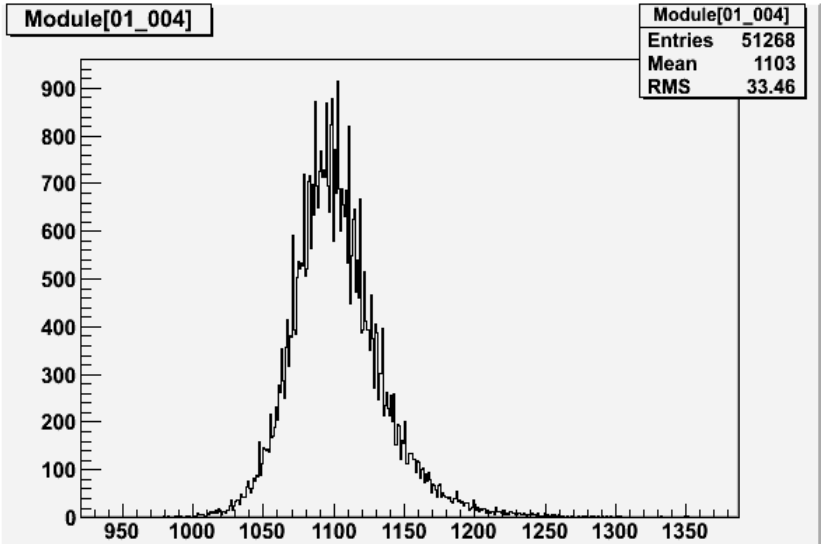
- The kit of nonworking SiPMs is different from run to run while the full number of unreliable SiPMs slowly increases with time and now is near 200.
- There exists small fraction of SiPMs with slowly growing noise . For 10 of them the increasing of noise became escalating with time .

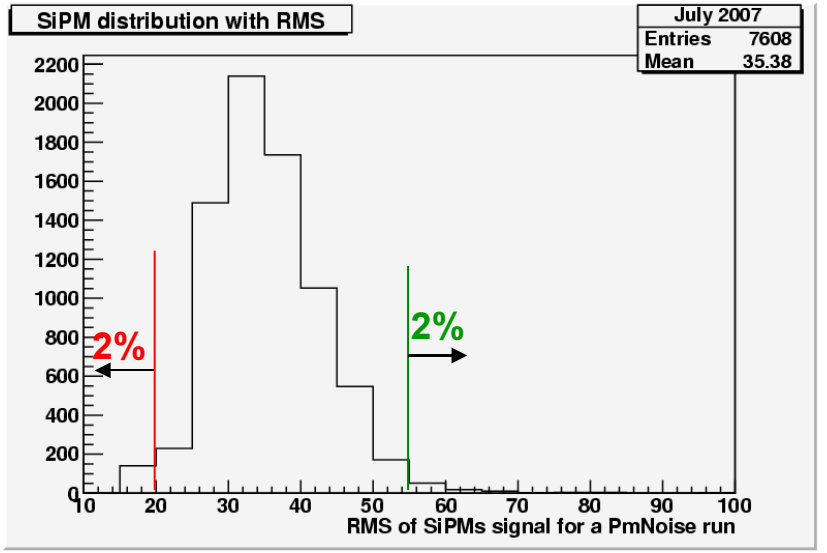
Oleg Markin , ITEP , Moscow.

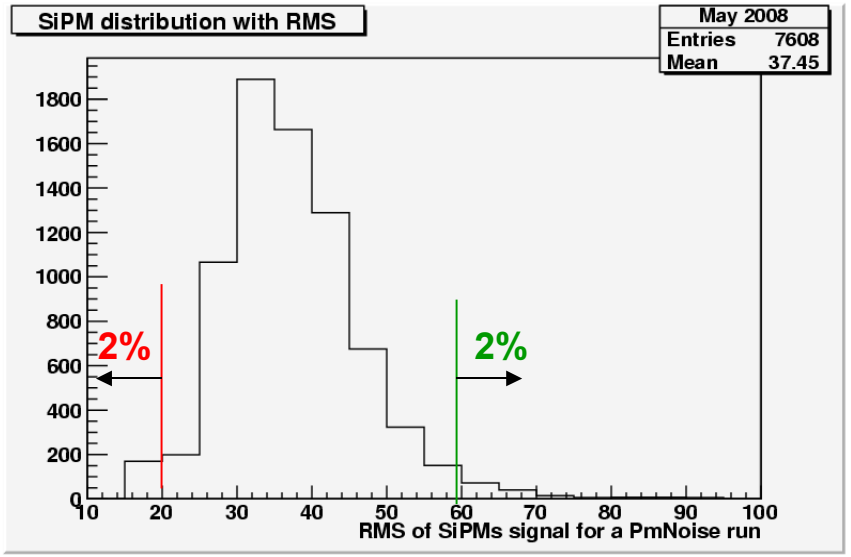
.The RMS of SiPM signal in pure pedestal runs has been chosen to separate SiPMs onto fractions .

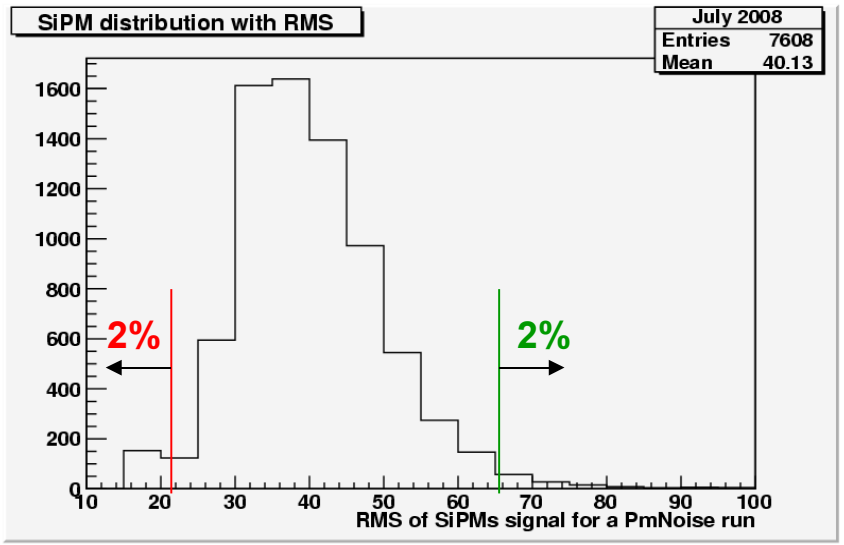
. Nonworking SiPMs are in the RMS region smaller than 20 .

. Too noisy SiPMs are in the RMS region higher than 55.



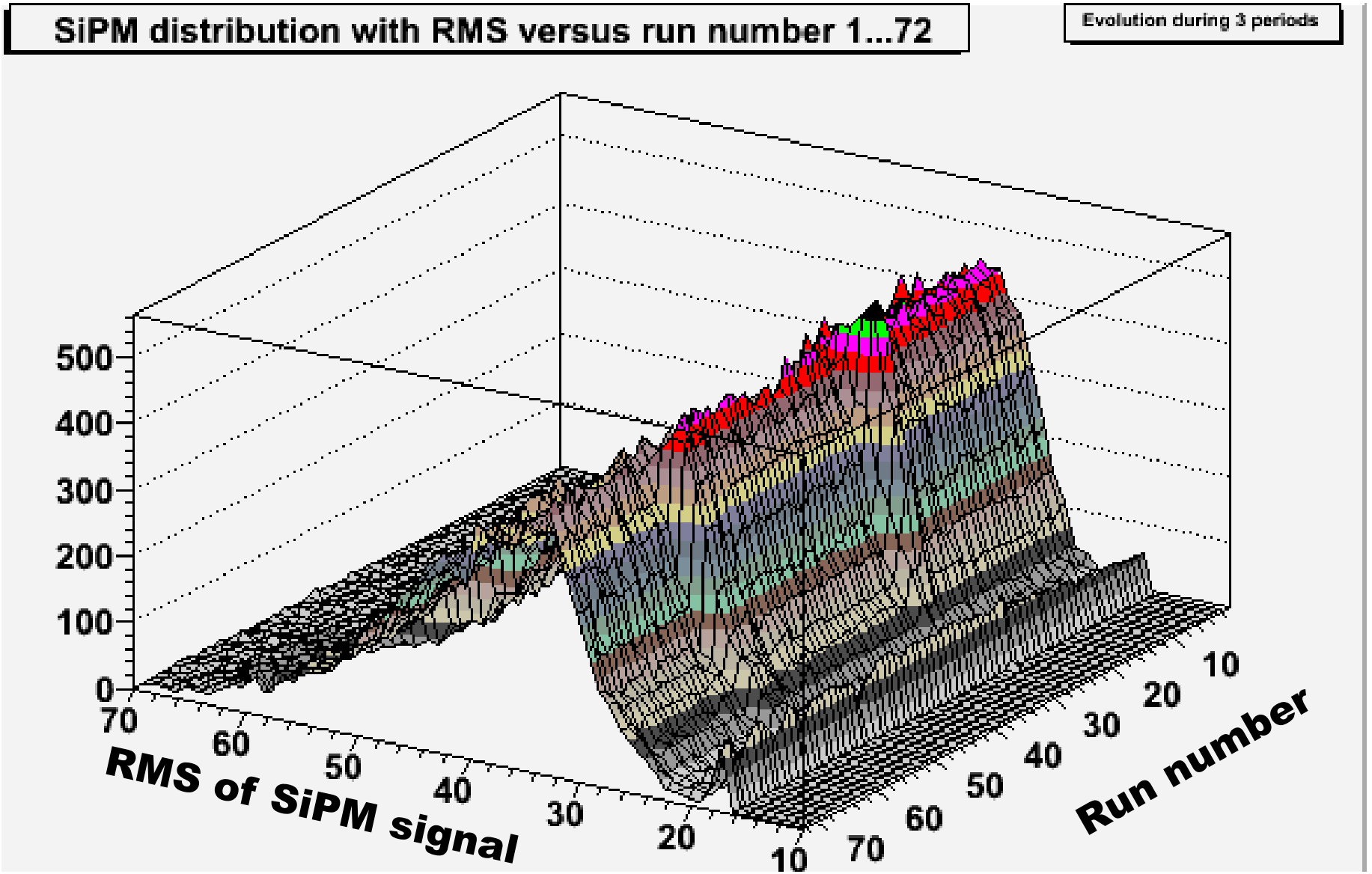






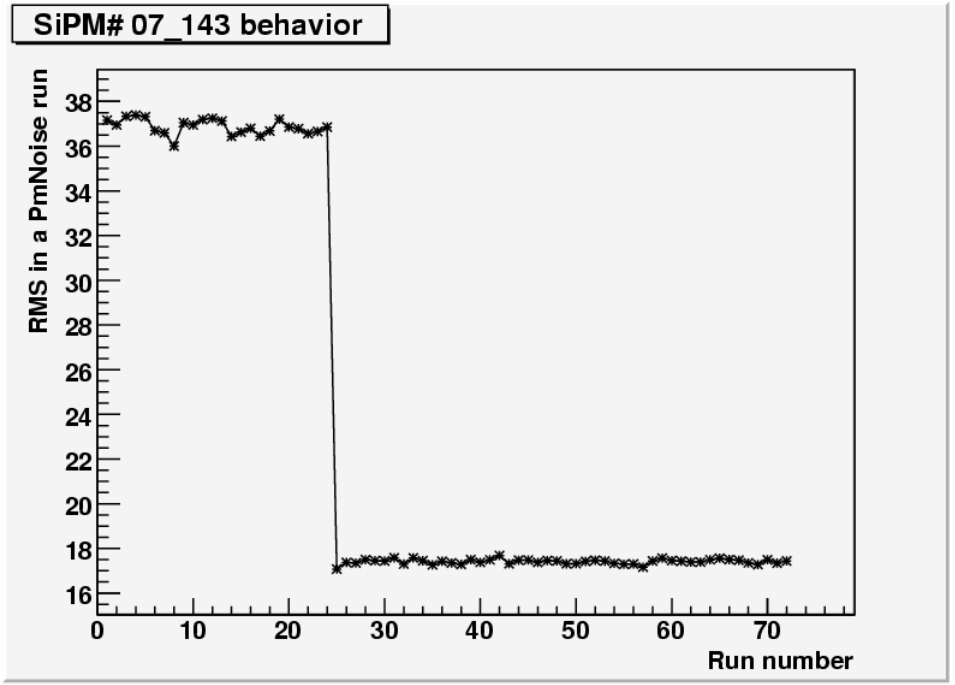
. The number of SiPMs with RMS smaller than 20 grows with time .

. The surface breaks when High Voltage settings were changed .

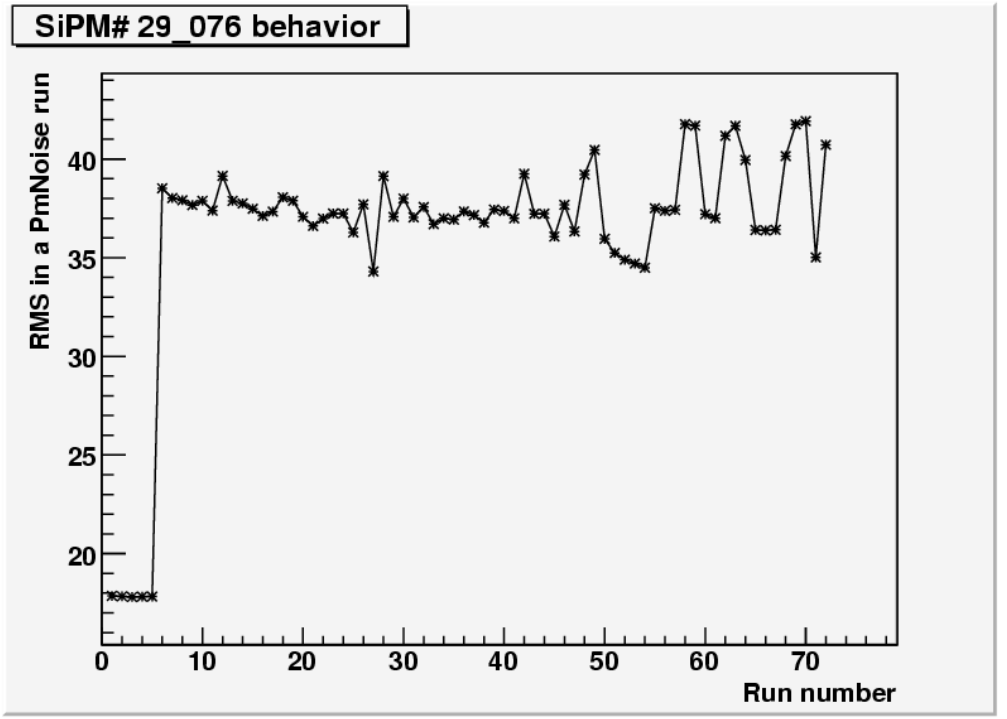


. There are 24 cases of quick SiPM transformation from good to dead and 3 cases v.v.

. There are no clear cases of smooth evolution of a SiPM from good to dead or v.v. , only sharp transformation, in one run .

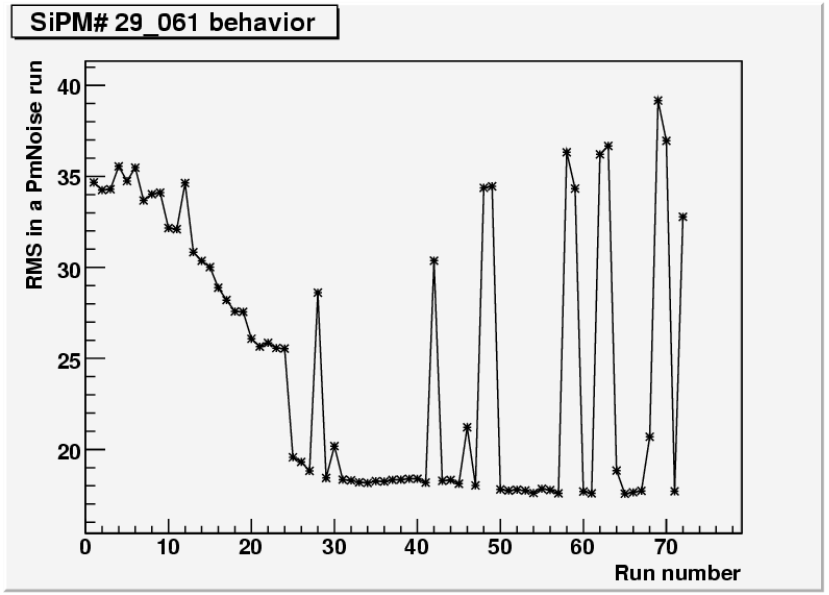


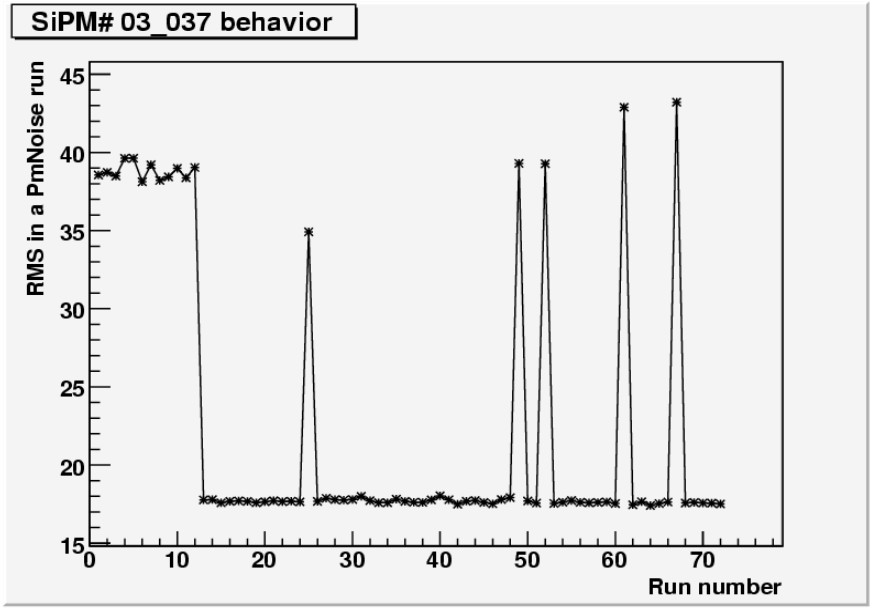
24 cases

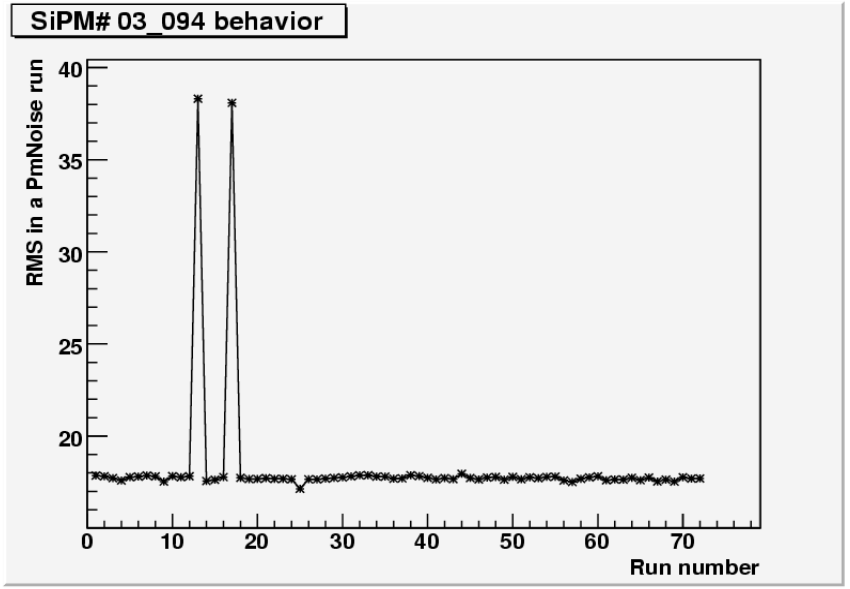


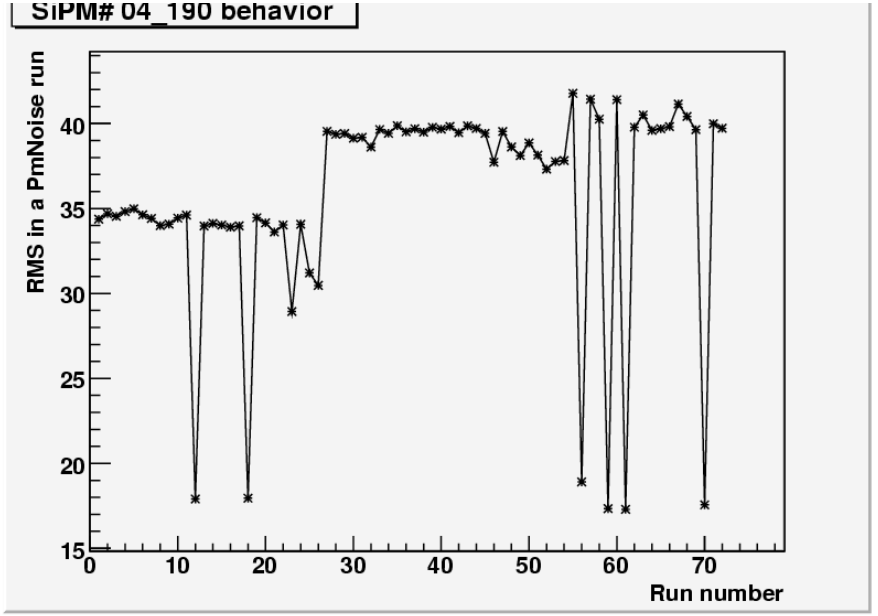
3 cases

. There are 111 cases of SiPM oscillation from working to nonworking .

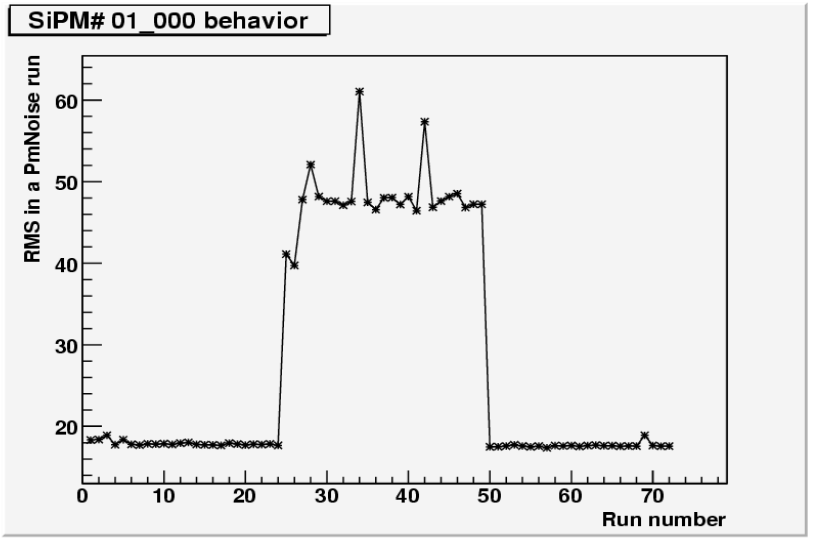


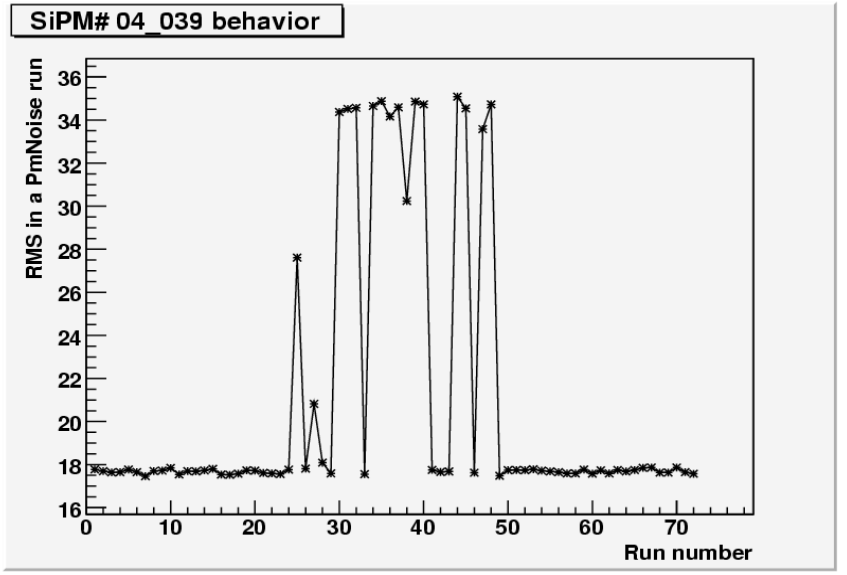


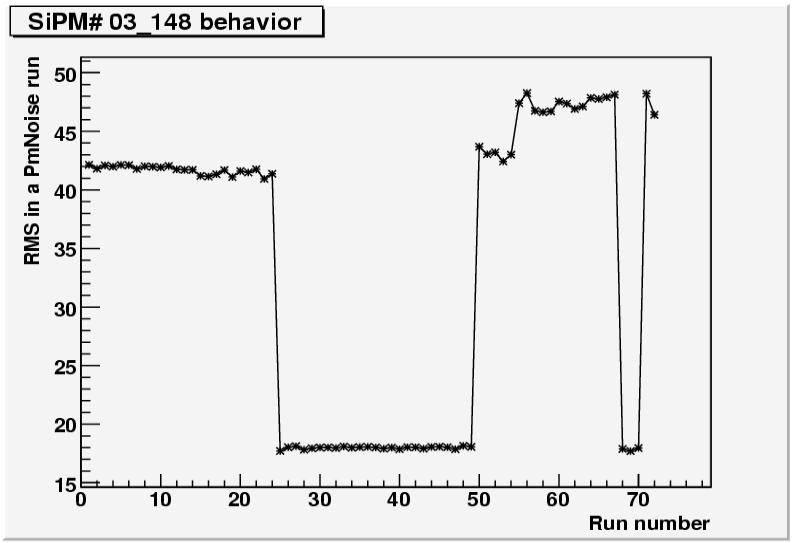


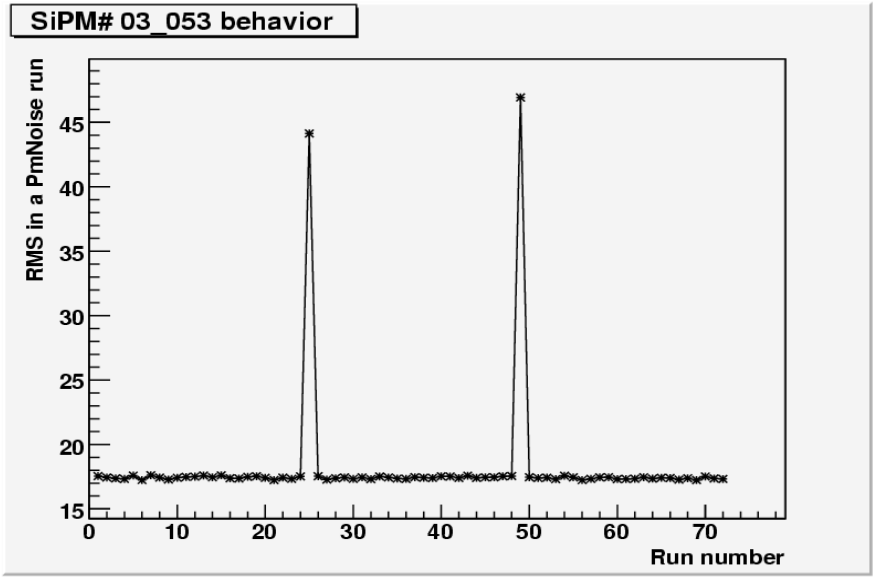


. A lot of oscillating SiPMs change their status every studying month - at runs 25 and 49 .

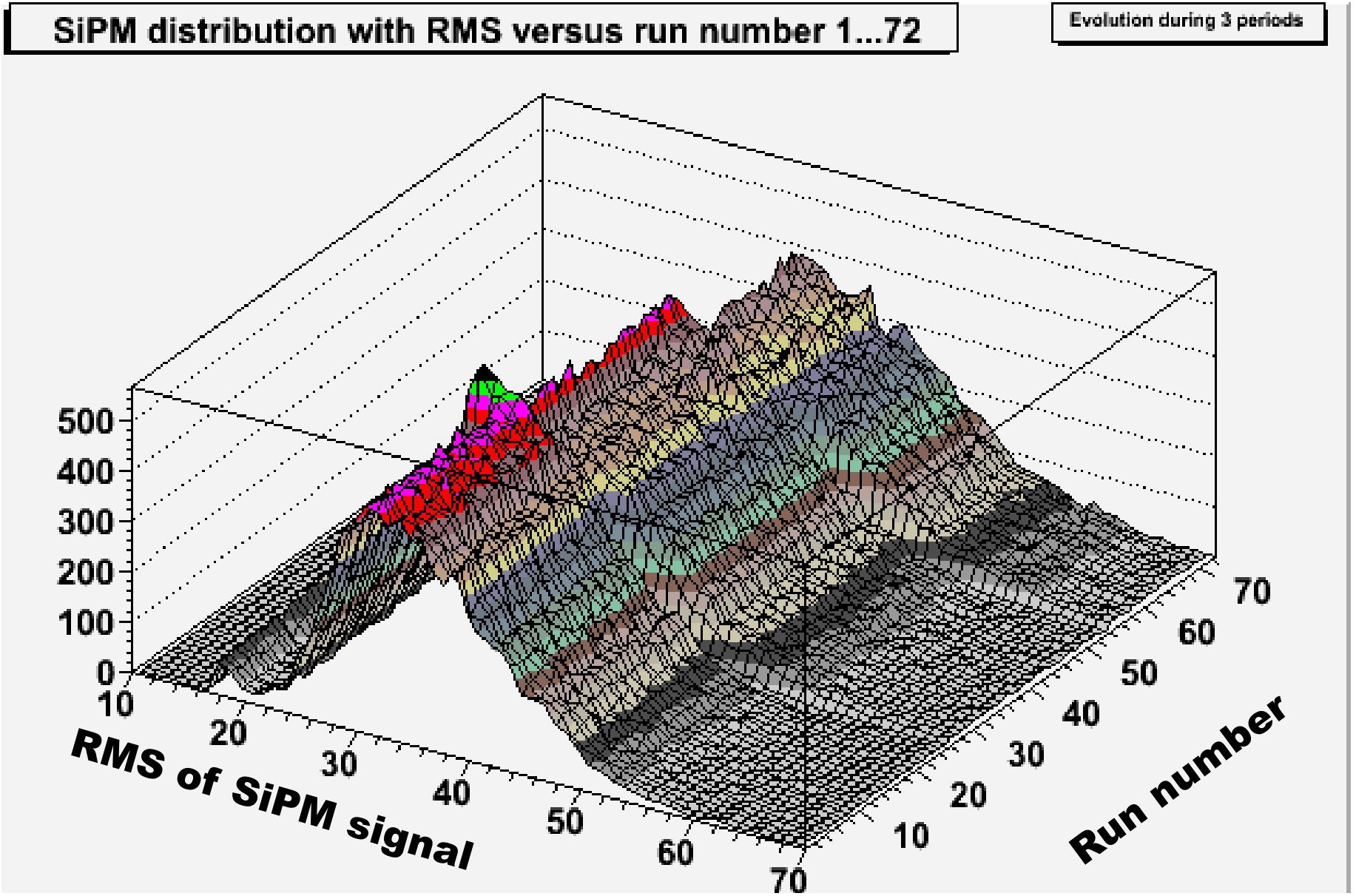




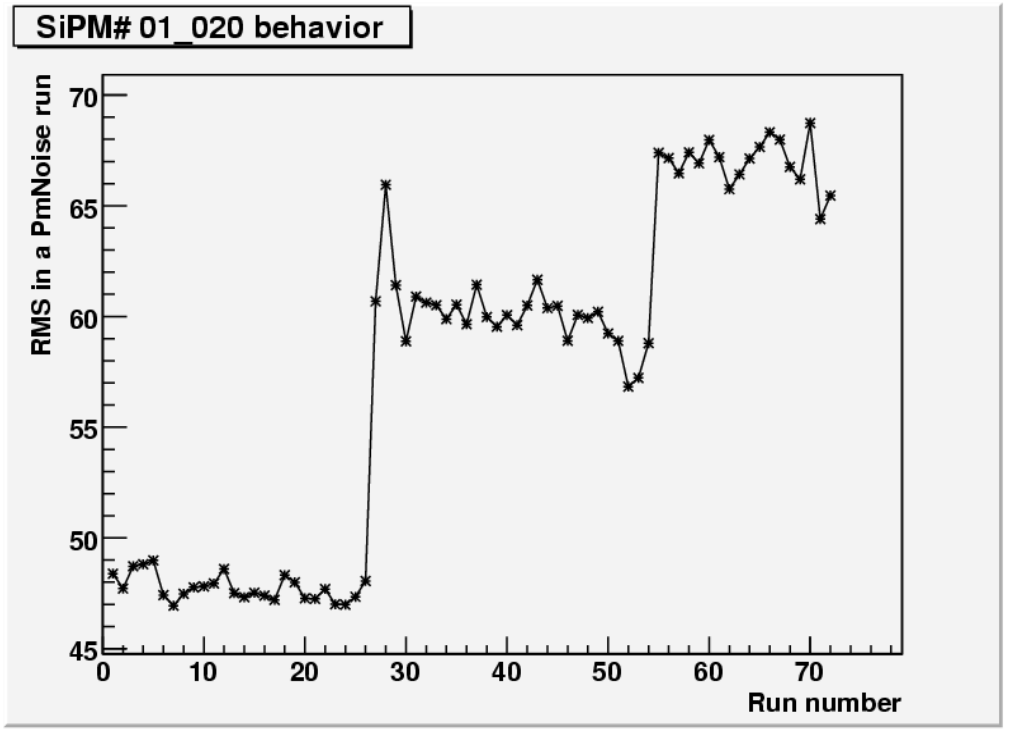


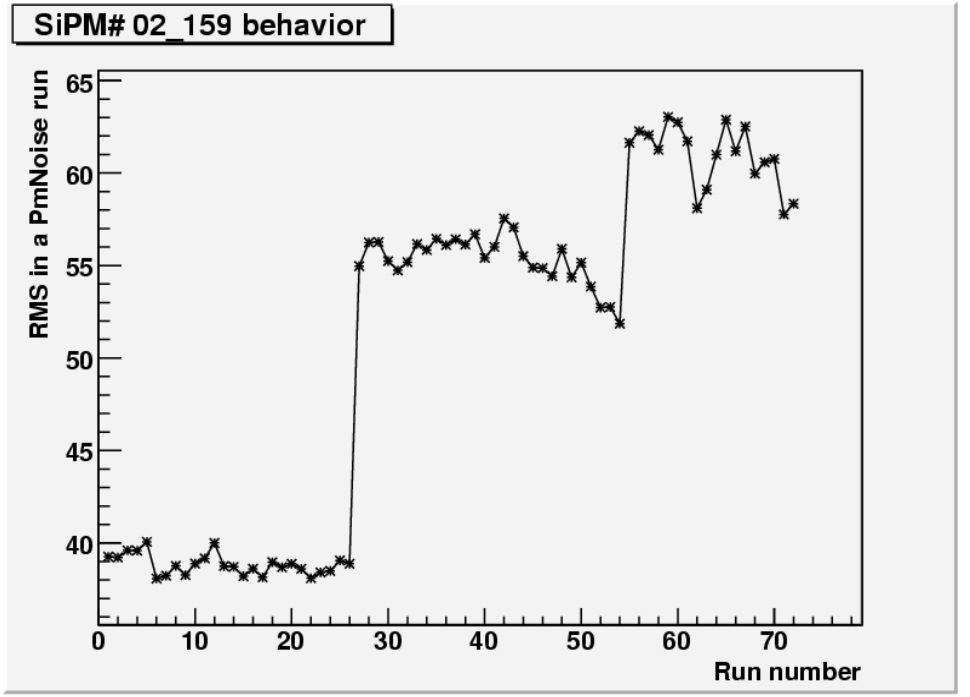


. High Voltage settings were changed at runs 27 and 55 .
. Between the voltage changing the number of noisy SiPM almost did not grow.



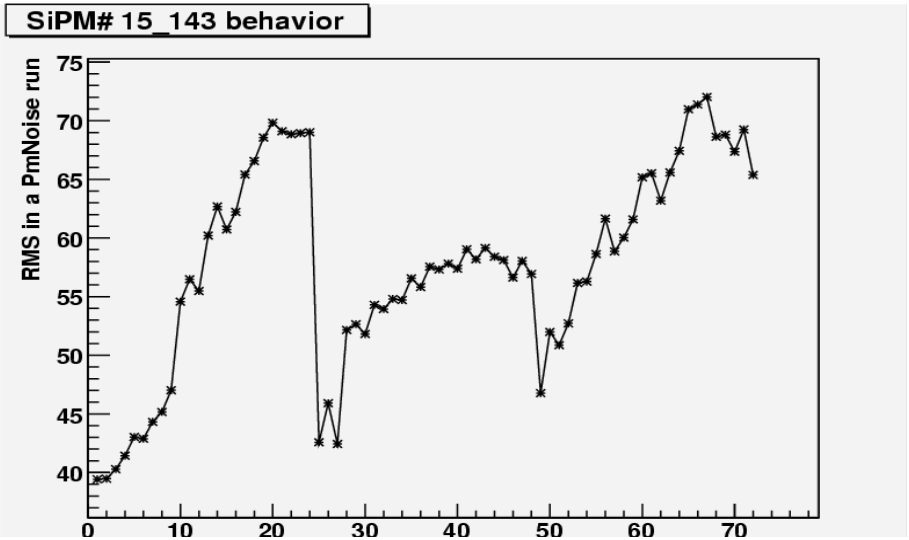
. . The High Voltage settings were changed for optimization of signal-noise ratio and have increased the SiPM noise.

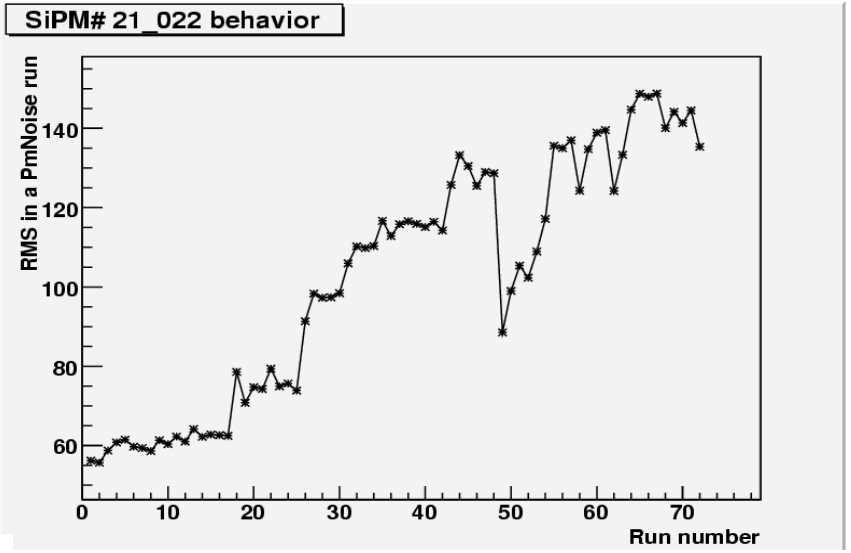


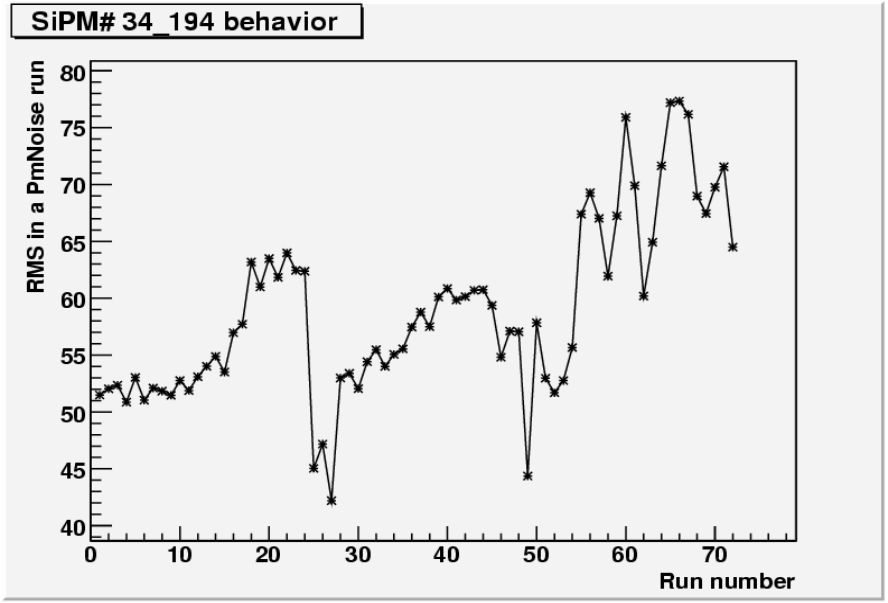


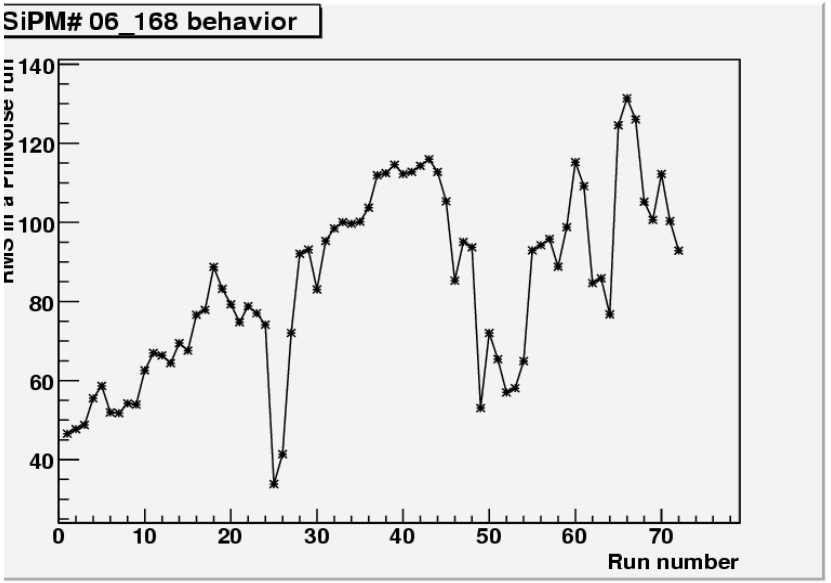
. Among near a hundred noisy SiPMs which had RMS between 55 and 60 on July 2007 there were 32 SiPMs with growing RMS .

. For 8 of them RMS has increased more than 20% from initial value during July 2007, then — differently .

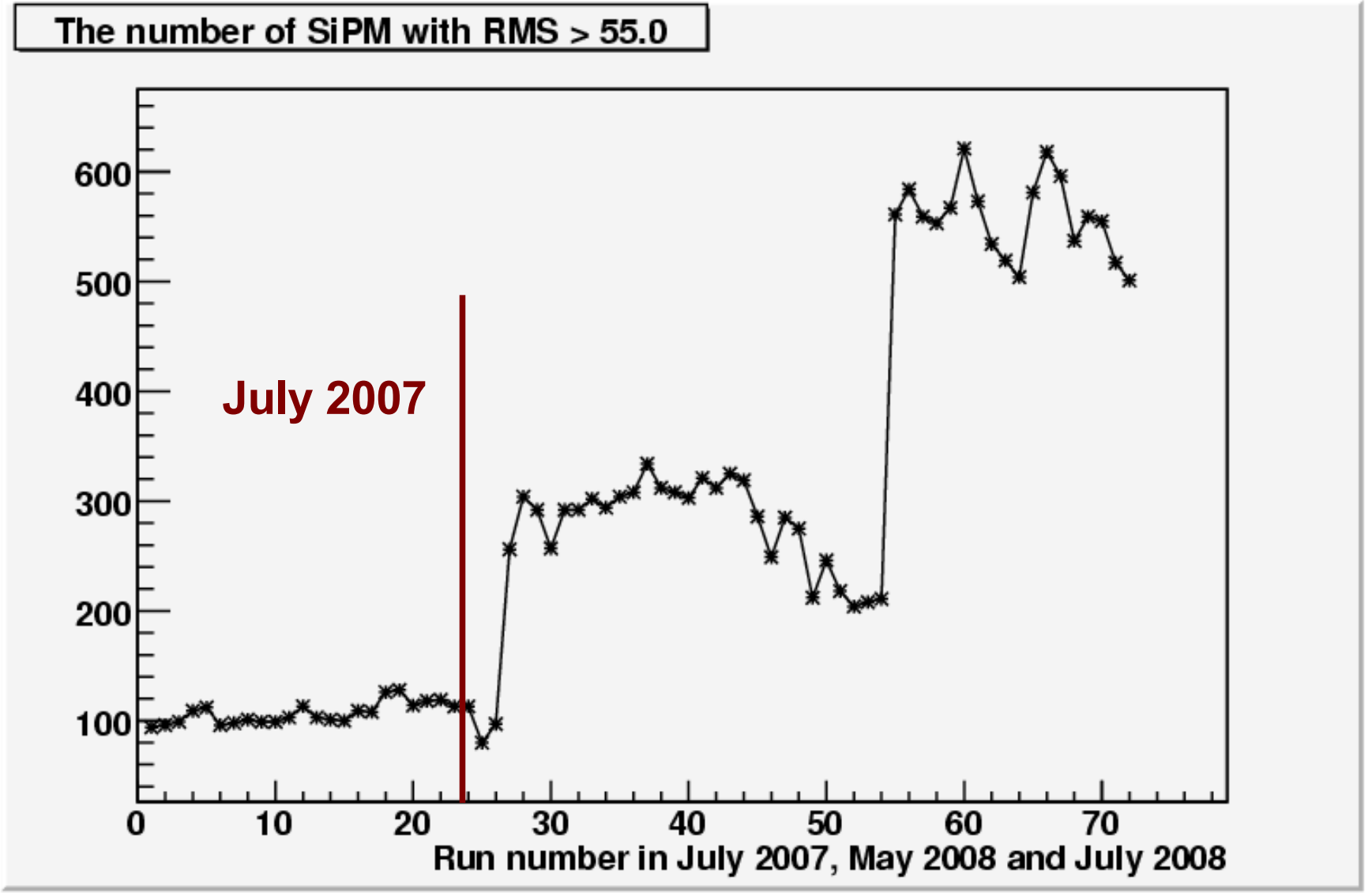








. The full number of pretty noisy SiPMs slowly grows from run to run and jumps with the changing of High Voltage settings .



. The number of noisy SiPMs fluctuate with time because of the RMS inverse correlation with the external temperature .