Documentation Preamps testing

04.05.2021

0.1 Setup

For this testing the setup of the FOPRA was used. The preamps were tested on the big box with the five large crystals inside. The small box (with 8 small crystals) was used as reference to check if there are RCBus interferences. As the five crystals of the large box are connected to one single Sub-D connector, the signal processing from the APDs to the output of the MPRB could only be tested for 5 channels on the Preamp card 0. For all other channels the test was done solely using the pulser. As pulser signal a square signal shape (low end: 0mV, high end: 10mV, 50% duty) with frequency of 250 Hz.

0.2 Test Results

All following plots are uncalibrated lim_energy plots. The pulser peak can be identified as the most right peak in the plots.

0.2.1 FOPRA Preamp

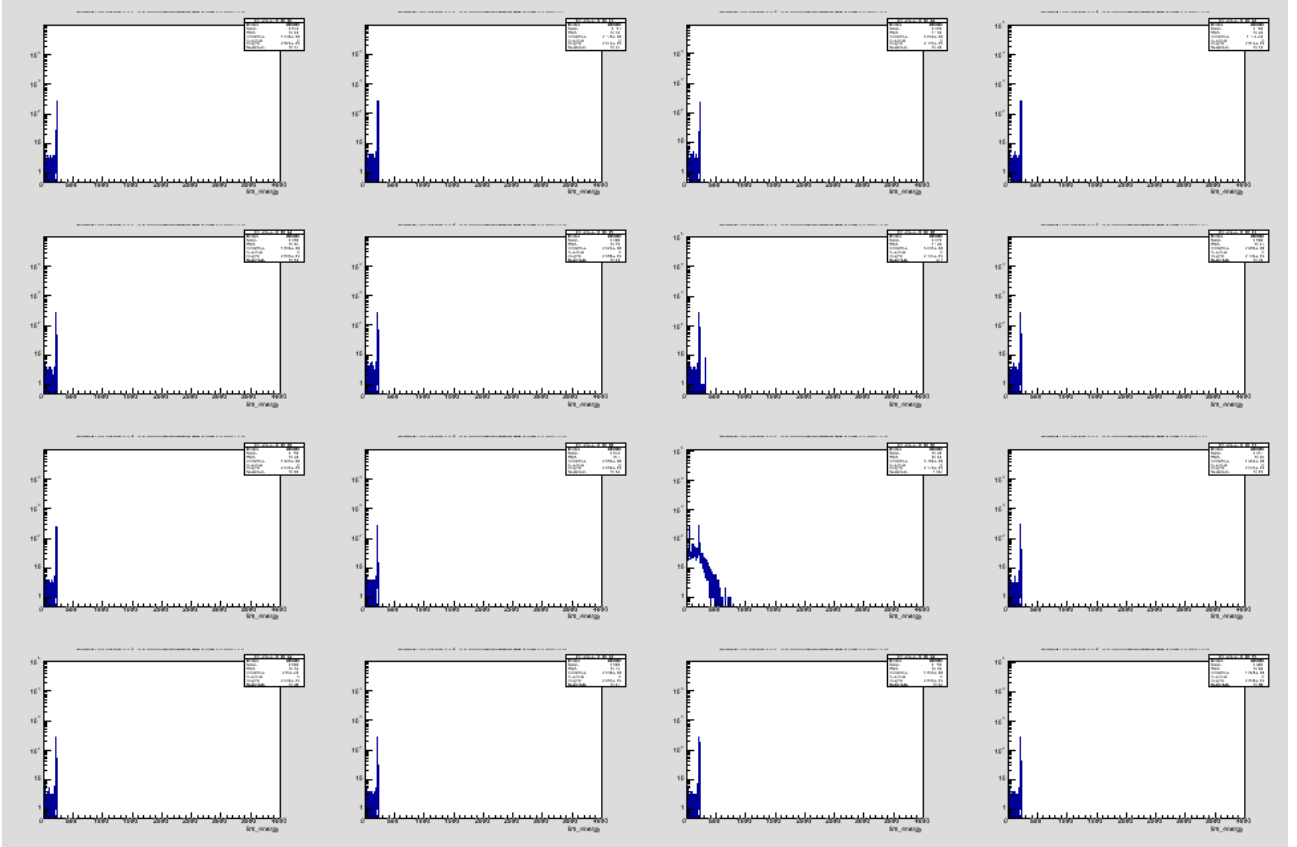To repair: card1, channel 10 noisy/broken.

Abbildung 1: FOPRA Preamp, card 1, all channels, no crystal, only pulser. Channel 10 noisy/broken.

0.2.2 Preamp 1

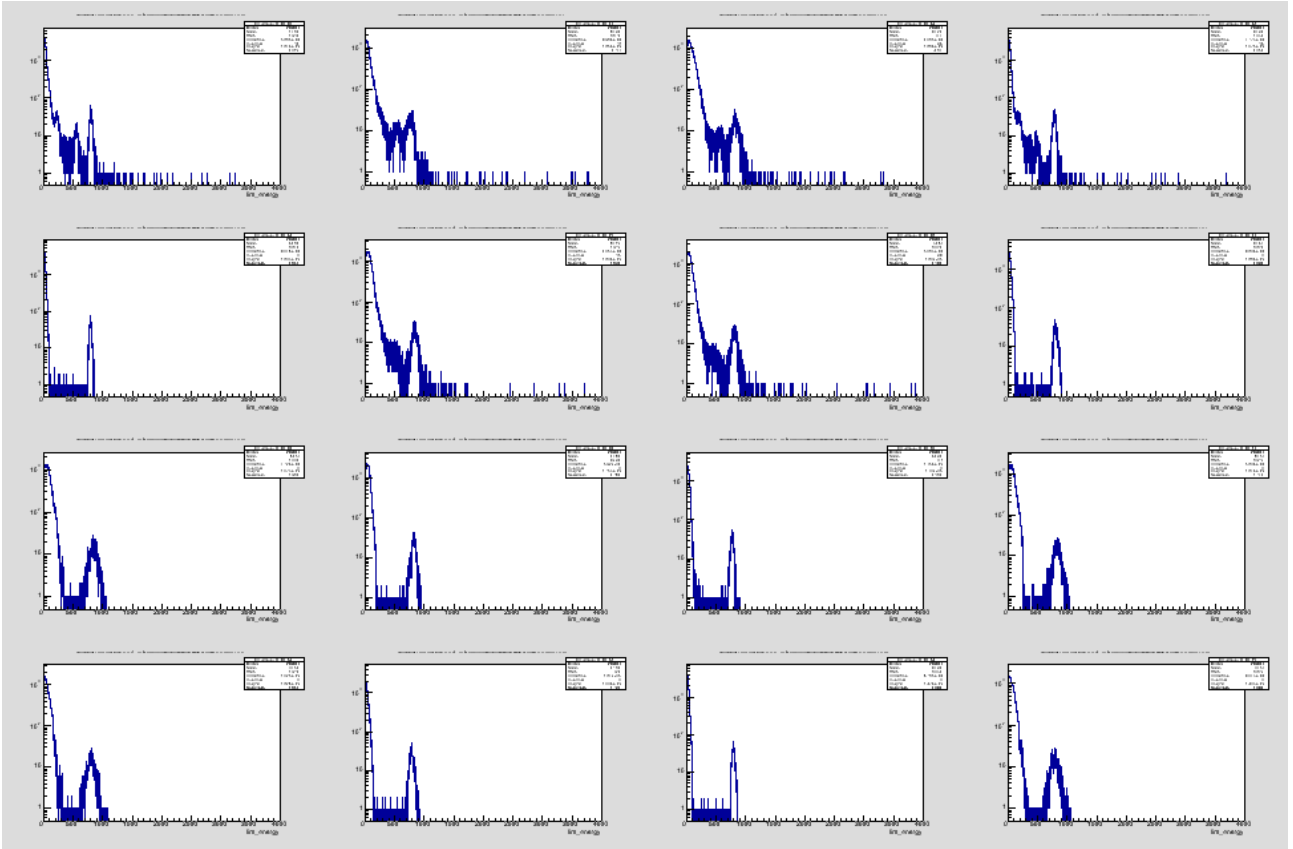To repair: All channels in both cards noisy.

Abbildung 2: Preamp 1, card 0, all channels, Na22 source with pulser. All channels noisy.
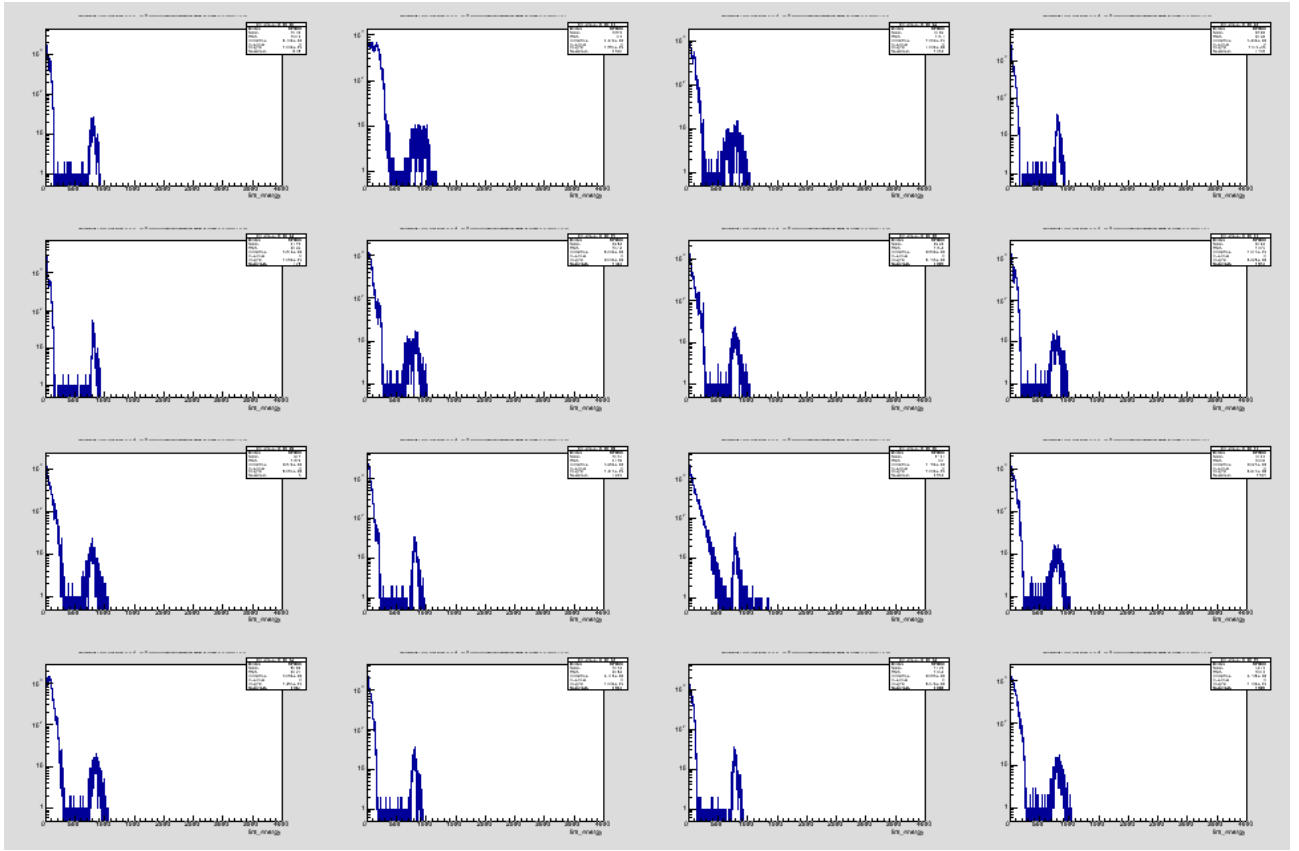
Abbildung 3: Preamp 1, card 1, all channels, no crystal, only pulser. All channels noisy.

0.2.3   Preamp 5
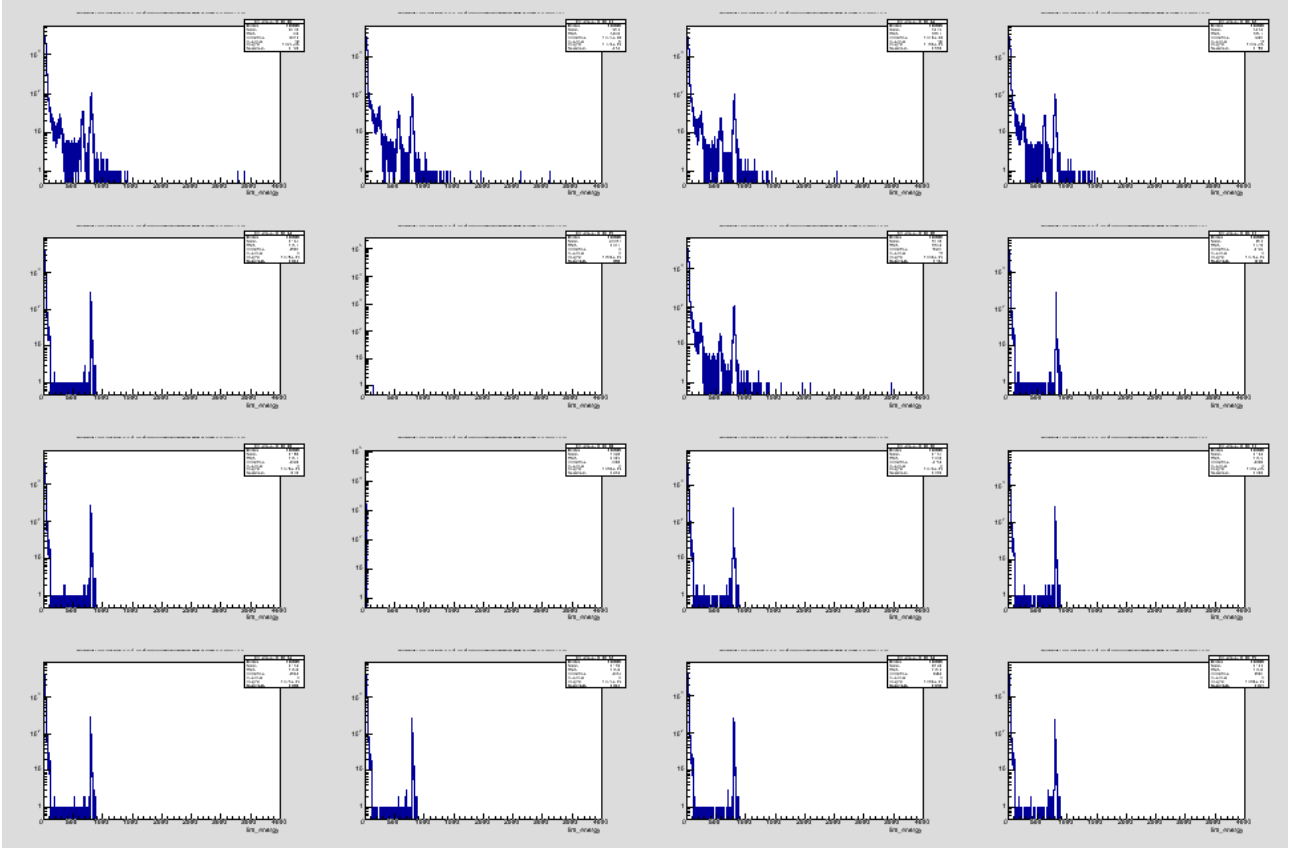
To repair: missing channel 5 and 9.

Abbildung 4: Preamp 5, card 0, all channels, Na22 source with pulser. Missing channel 5 and 9.

0.2.4 Preamp 6 (Dual Range)

To repair: card 0 channels 0,9,10,11,12,15 are noisy. card1 channels 7,8,9,10,11,12,15 are noisy.
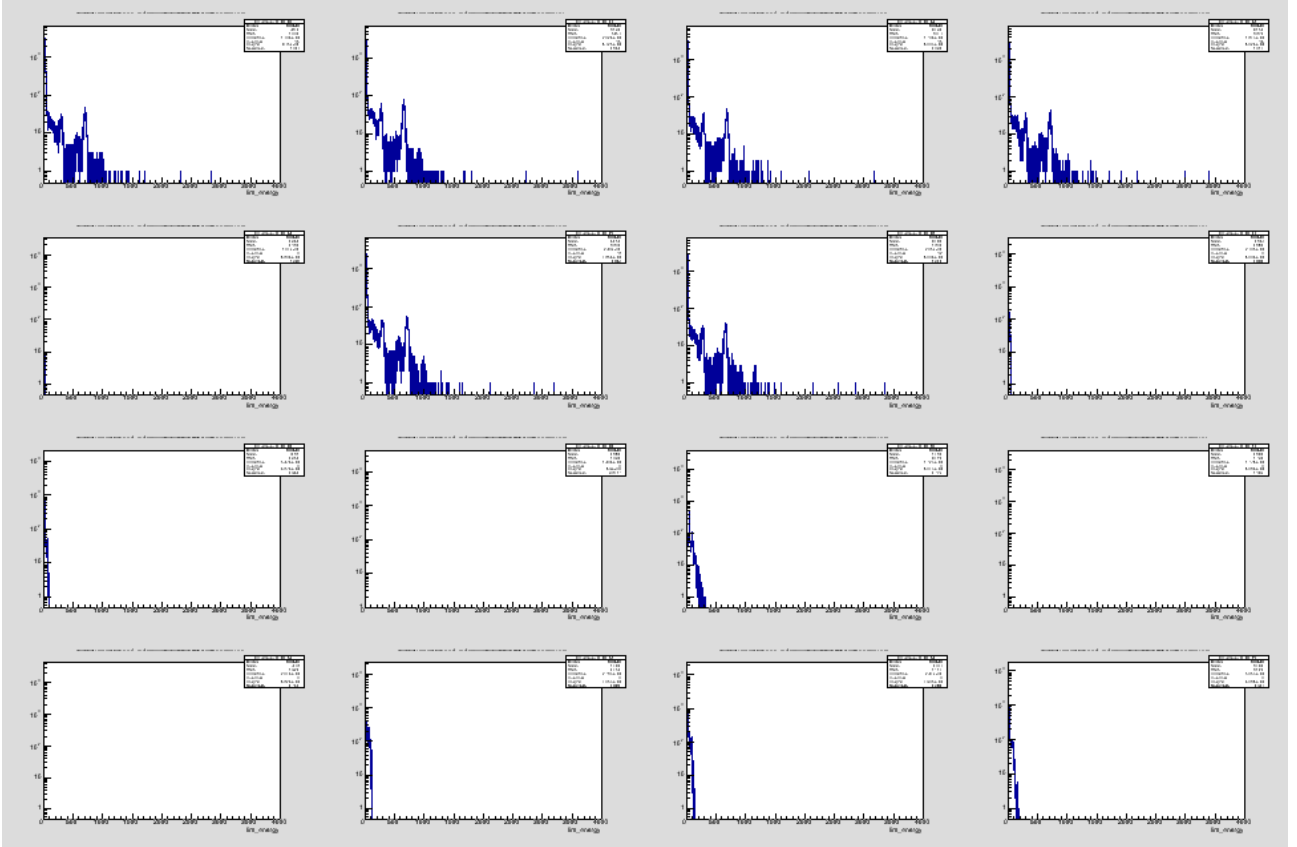

Abbildung 5: Preamp 6, card 0, all channels, Na22 source no pulser. Channels 0,9,10,11,12,15 are noisy
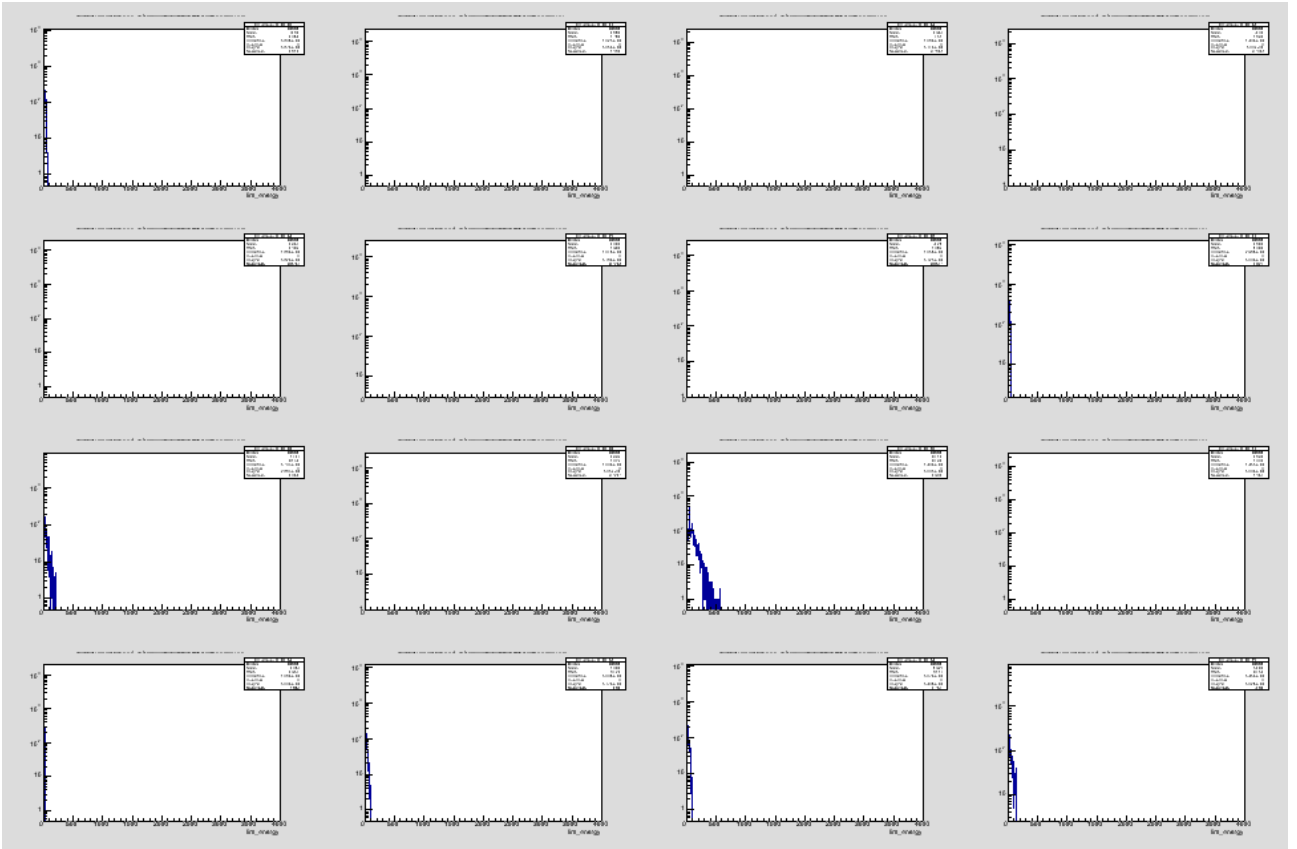
Abbildung 6: Preamp 6, card 1, all channels, Na22 source no pulser. Channels 7,8,9,10,11,12,15 are noisy.

0.2.5 Preamp 7 (Dual Range)

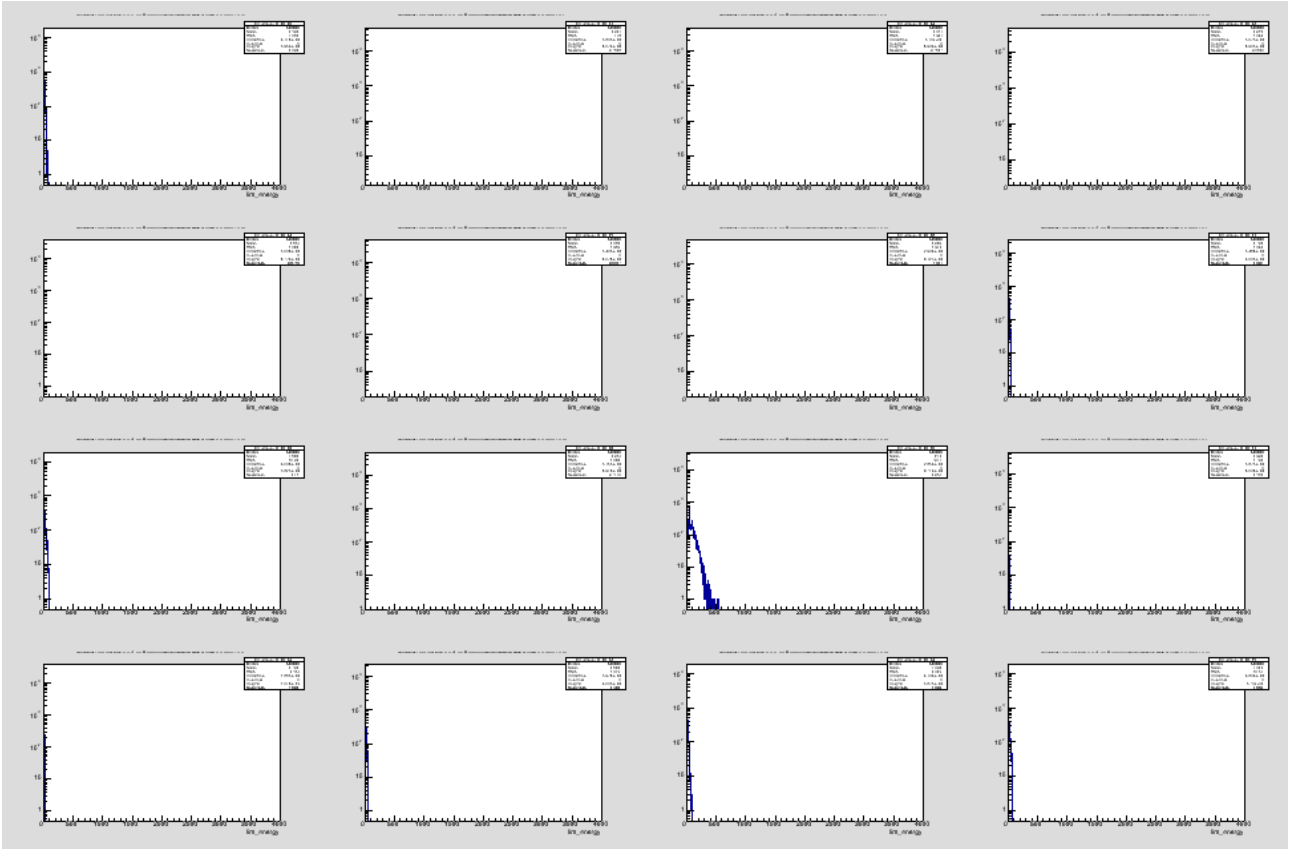To repair: card 1 channels 0,7,8,10,13,14,15 are noisy.

Abbildung 7: Preamp 7, card 1, all channels, Na22 source no pulser. Channels 0,7,8,10,13,14,15 are noisy.

0.2.6 Preamp 8 (Dual Range)

To repair: card 0 channels 8,9,10,11,12,15 are noisy. Card1 all channels are noisy.
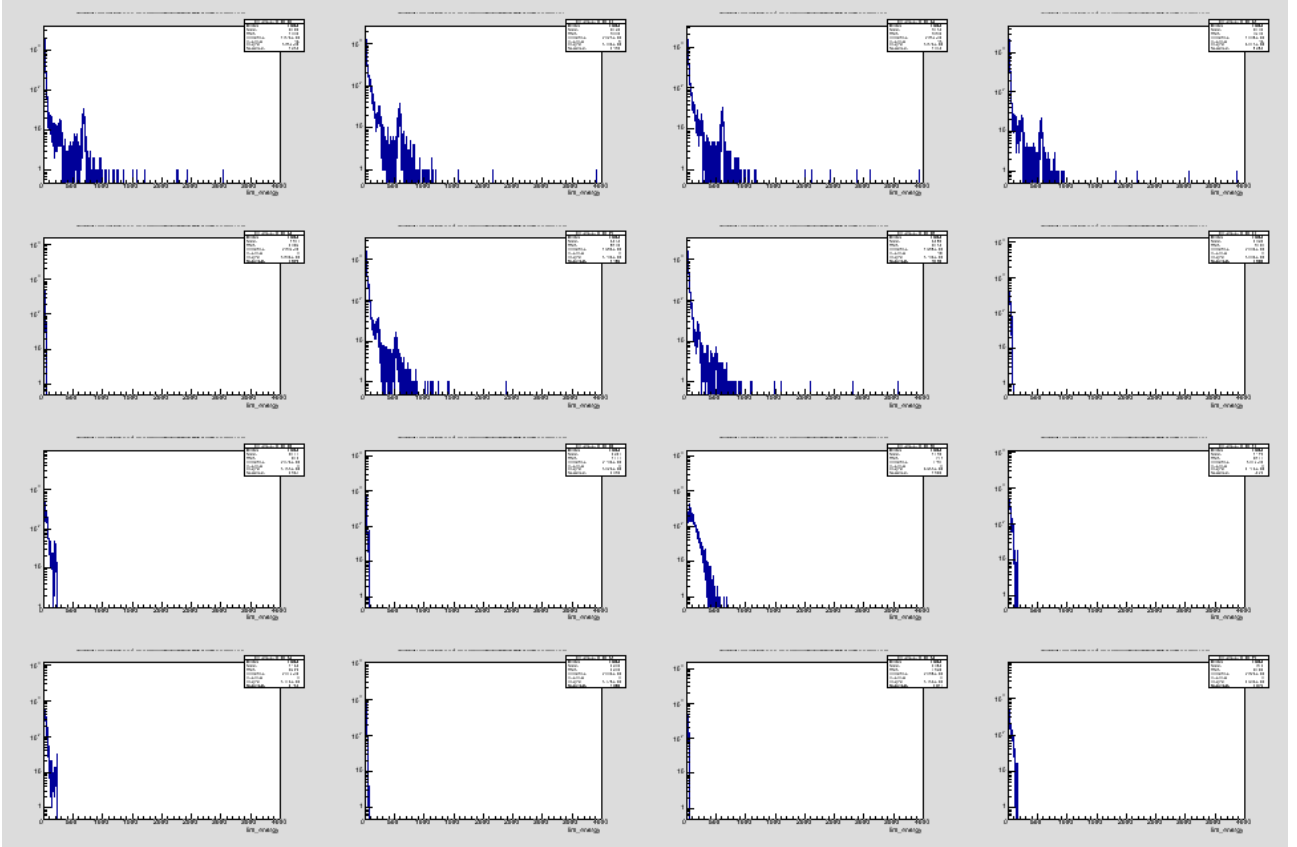

Abbildung 8: Preamp 8, card 0, all channels, Na22 source no pulser. Channels 8,9,10,11,12,15 are noisy
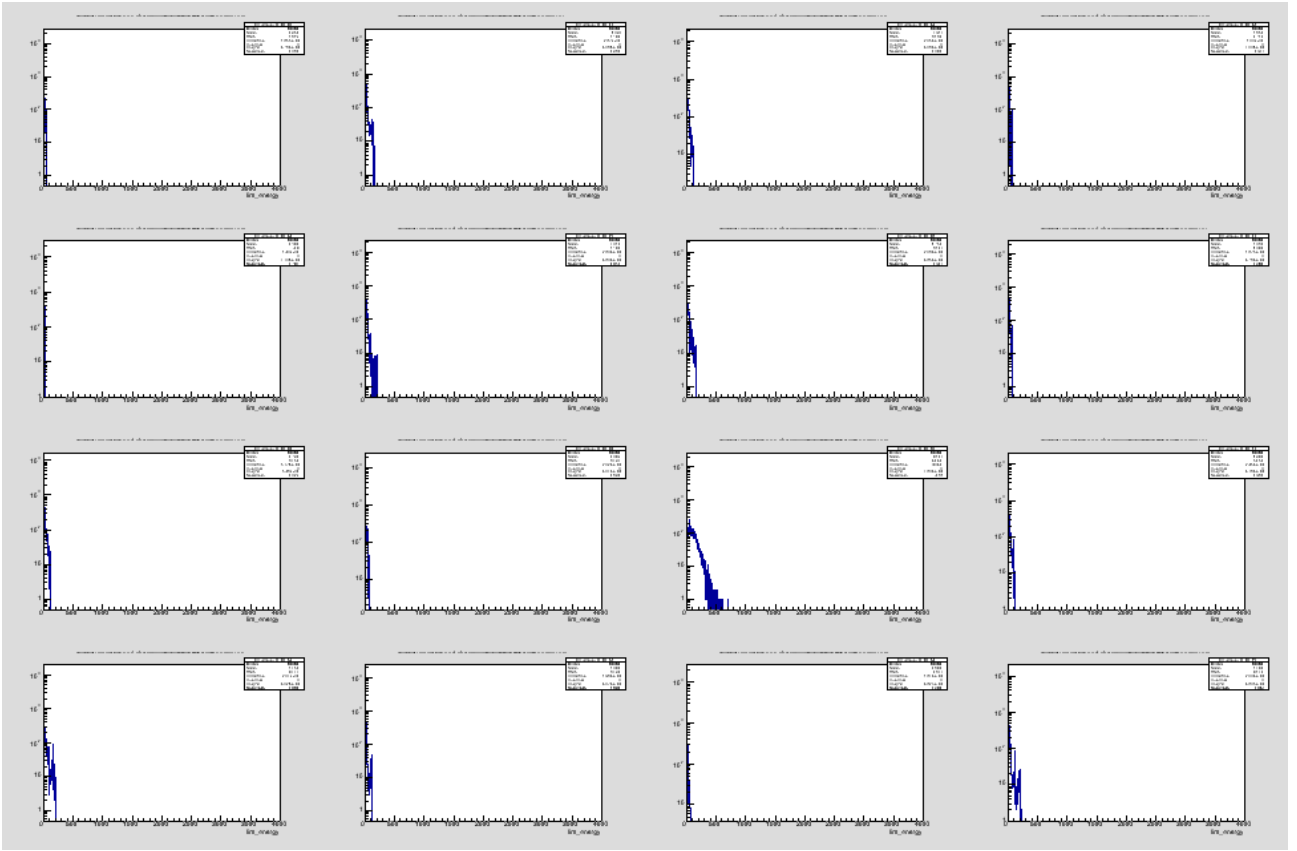
Abbildung 9: Preamp 8, card 1, all channels, Na22 source no pulser. All channels are noisy.

0.2.7 Preamp 10

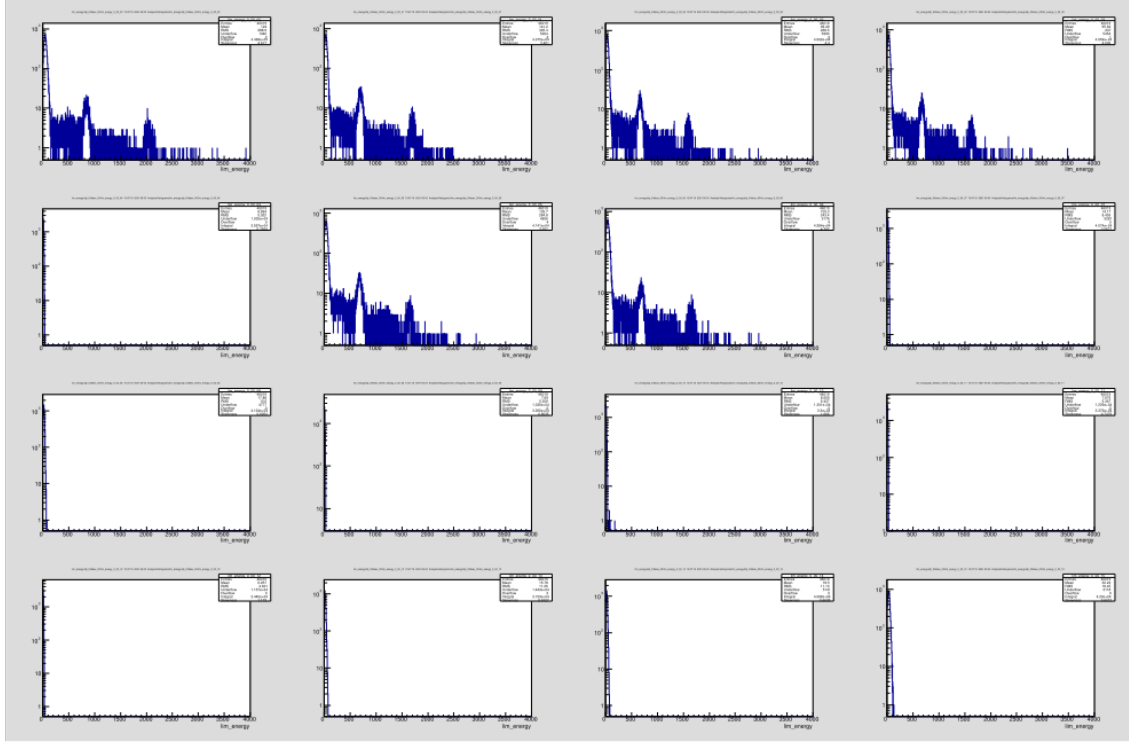To repair: card0 channels 10,11,15 are noisy.

Abbildung 10: Preamp 10, card 0, all channels, Na22 source no pulser. Channels 10,11,15 are noisy.

0.3 Summary - repair demand

Preamp 1, seems to be noisy in both cards (0,1), bad resolultion.
Preamp 5, card 0: here we have missing channels 5 and 9.
FOPRA Preamp, card 1: channel 10 noisy/broken.
Preamp 6, card 0: 9,10,11,12,15 channels are noisy. card 1: 7,8,9,10,11,12,15 channels are noisy.
Preamp 7, card 1: 0,7,8,10,13,14,15 channels are noisy
Preamp 8, card0: 8,9,10,11,12,15 channels are noisy. card1: all channels noisy
Preamp10,card 0: 10,11,15 channels noisy.