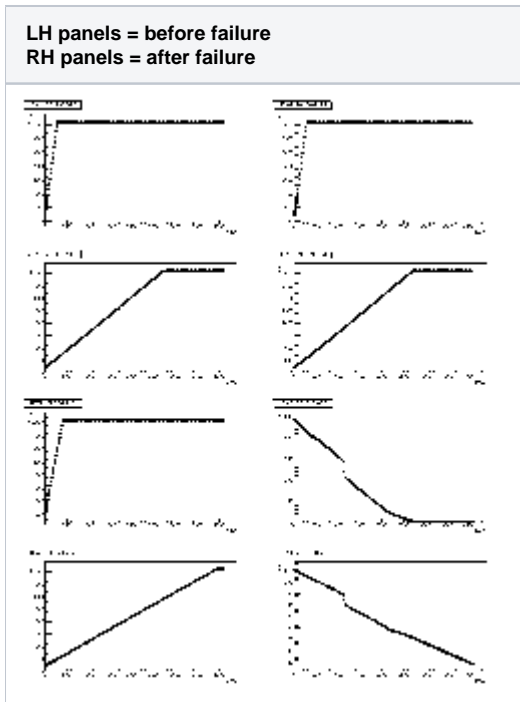


Charge injection for CAL channel twr=4,lyr=2,col=4,face=0 before and after failure

Last Thursday (Sep 23, 2010) the LCI run has been collected for the first time after the failure of high energy ranges in the channel twr=4,lyr=2,col=4, face=0.

I've analyzed the new LCI run and compared the results with previous LCI run collected on July 1, 2010. The comparison for the above mentioned channel before and after failure is shown on the following plot:



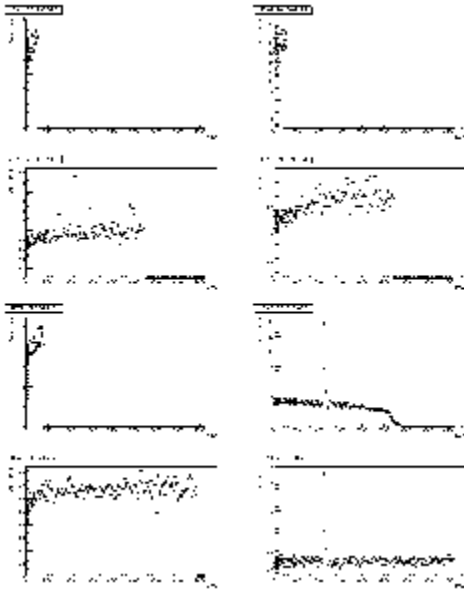
Left 4 plots show the charge injection curves ADC vs DAC (pedestals are NOT subtracted) for 4 energy ranges (LEX8, LEX1, HEX8, HEX1) obtained from July LCI run, prior to failure. Life is normal.

Right 4 plots show the same curves obtained from September run, after the failure. Life is not normal.

In July all four curves were linear until saturation. In September LEX8 and LEX1 curves are unchanged, while HEX8 and HEX1 curves show negative sign signal with ~50 times smaller amplitude. Pedestals are unchanged, and the ratio of HEX8/HEX1 (after pedestal subtraction) is still correct (~9). This confirms that track and hold stages work, and the failure happened somewhere in preamp. The small negative signal we see is probably the result of parasitic coupling between preamp input and output.

The "step" we see at DAC~1200 is probably the result of crosstalk from FHE discriminator (in normal channel it is seen at DAC~30, but at approximately the same ADC signal), confirming that FHE discriminator is also alive.

The following plot shows the change in RMS of ADC measurements for the same DAC value (which gives the electronic noise):



For HEX8 and HEX1 ranges noise didn't change much, while for LEX8 and LEX1 ranges noise became more than 2 times bigger.