

MCA STATUS

Francesca Bucci

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Waiting for the amplifier to connect monitor tubes

MCA fed with pulses from a pulse generator to:

- check the working status
- check the control software
- understand output format

Pulses

MCA input:

- range 0-5V
- peaking time > 250ns

Used (generator settings):

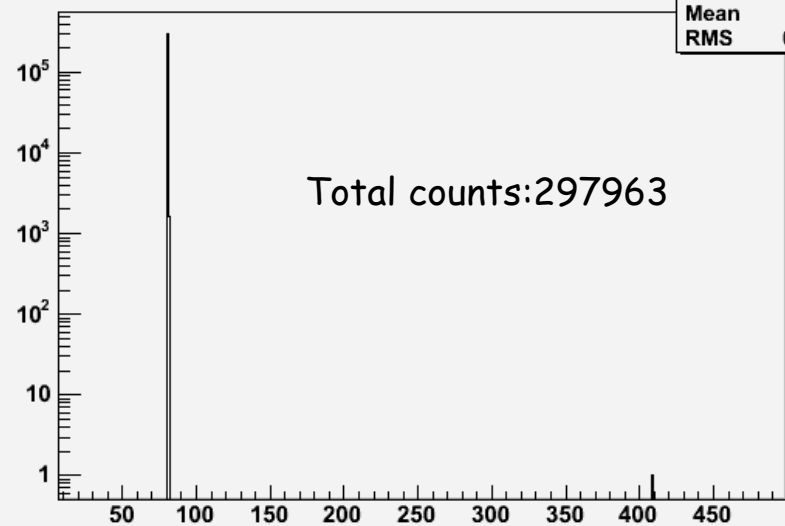
- several amplitudes in range
(Hilevel: variable; Lolevel: +0.0mV)
- width: 1us
- frequency 10kHz
- edge time: 100ns (maximum for the generator used)

Note: pulses were first checked with an oscilloscope

Output

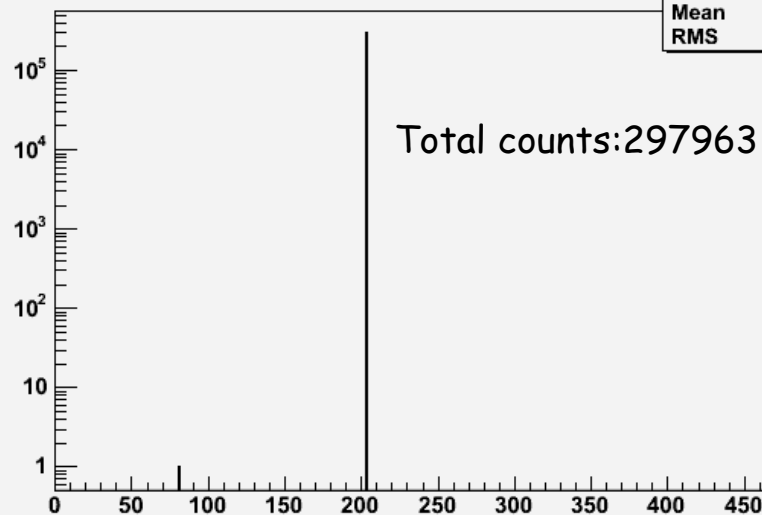
- output:
 - acquisition start time, stop time, number of counts in each bin
- histogram counts vs bin #:
 - a sharp peak is expected
 - about 3×10^5 counts with the run time fixed to 30s @10KHz
 - changing pulse amplitude: same shape moving to higher bin #

MCA output . Input: 200mV, 1us, 10kHz. Run time: 30s



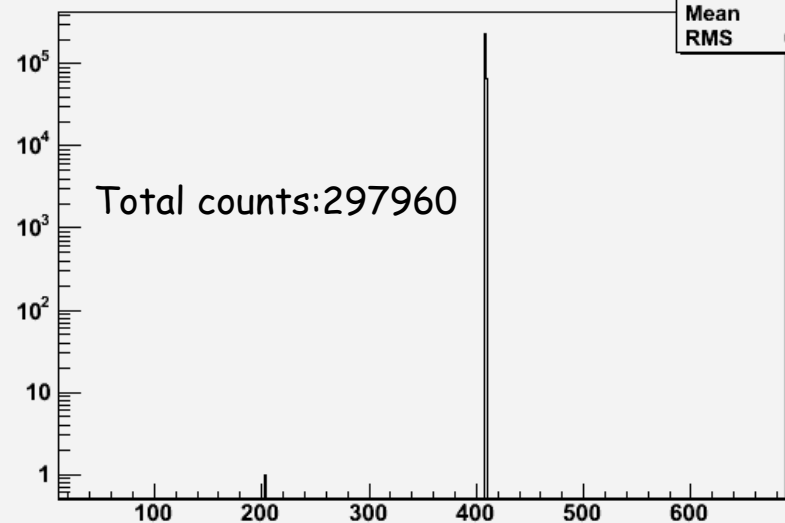
h_mca	
Entries	1000
Mean	80.51
RMS	0.6054

MCA output . Input: 500mV, 1us, 10kHz. Run time: 30s



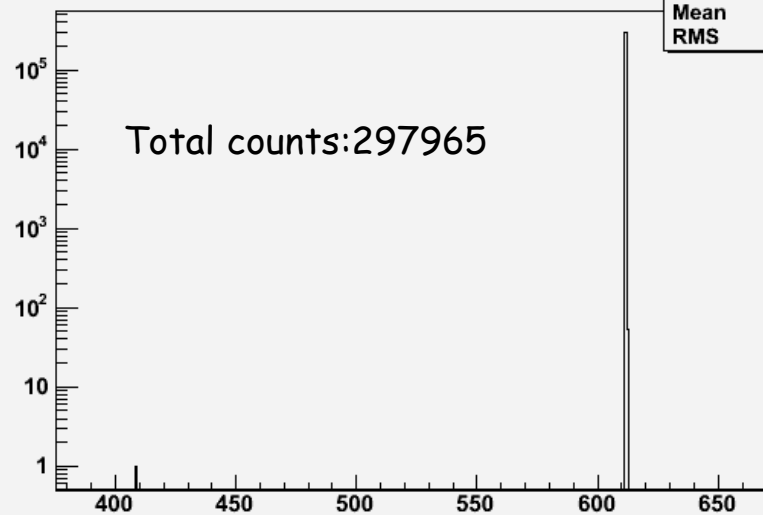
h_mca	
Entries	1000
Mean	203.5
RMS	0.2253

MCA output . Input: 1V, 1us, 10kHz. Run time: 30s



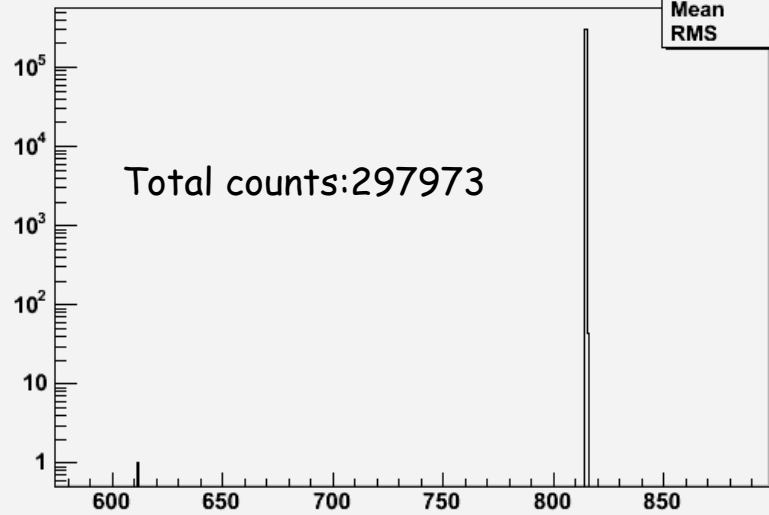
h_mca	
Entries	1000
Mean	408.7
RMS	0.5622

MCA output . Input: 1.5V, 1us, 10kHz. Run time: 30s



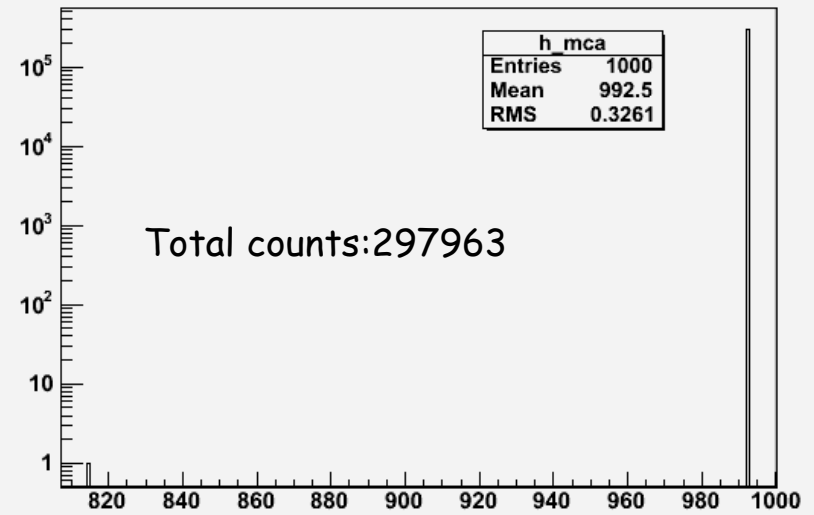
h_mca	
Entries	1000
Mean	611.5
RMS	0.3721

MCA output . Input: 2V, 1us, 10kHz. Run time: 30s



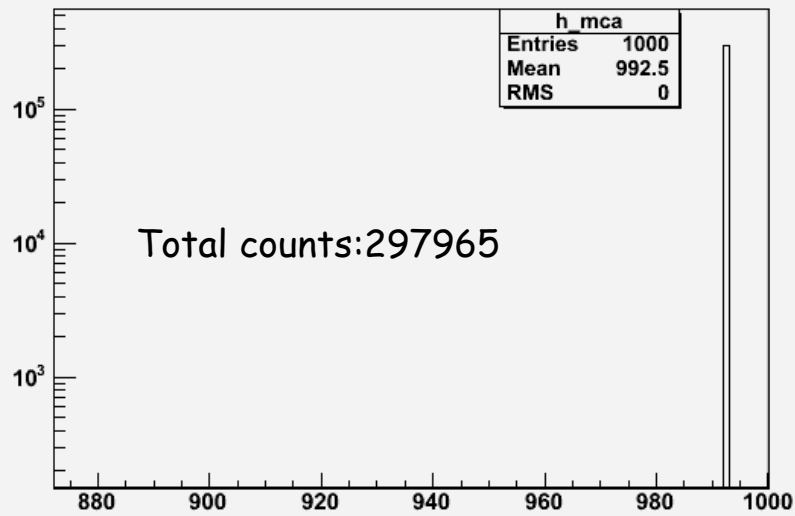
h_mca	
Entries	1000
Mean	814.5
RMS	0.3721

MCA output . Input: 2.5V, 1us, 10kHz. Run time: 30s



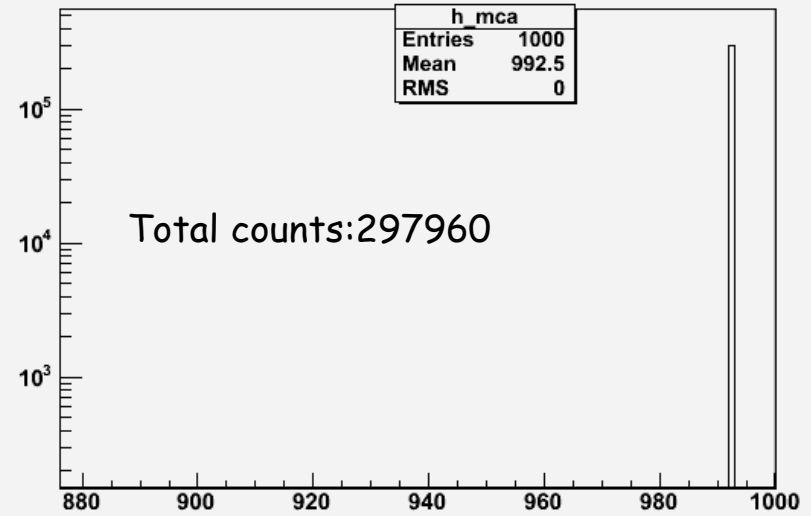
h_mca	
Entries	1000
Mean	992.5
RMS	0.3261

MCA output . Input: 3V, 1us, 10kHz. Run time: 30s



h_mca	
Entries	1000
Mean	992.5
RMS	0

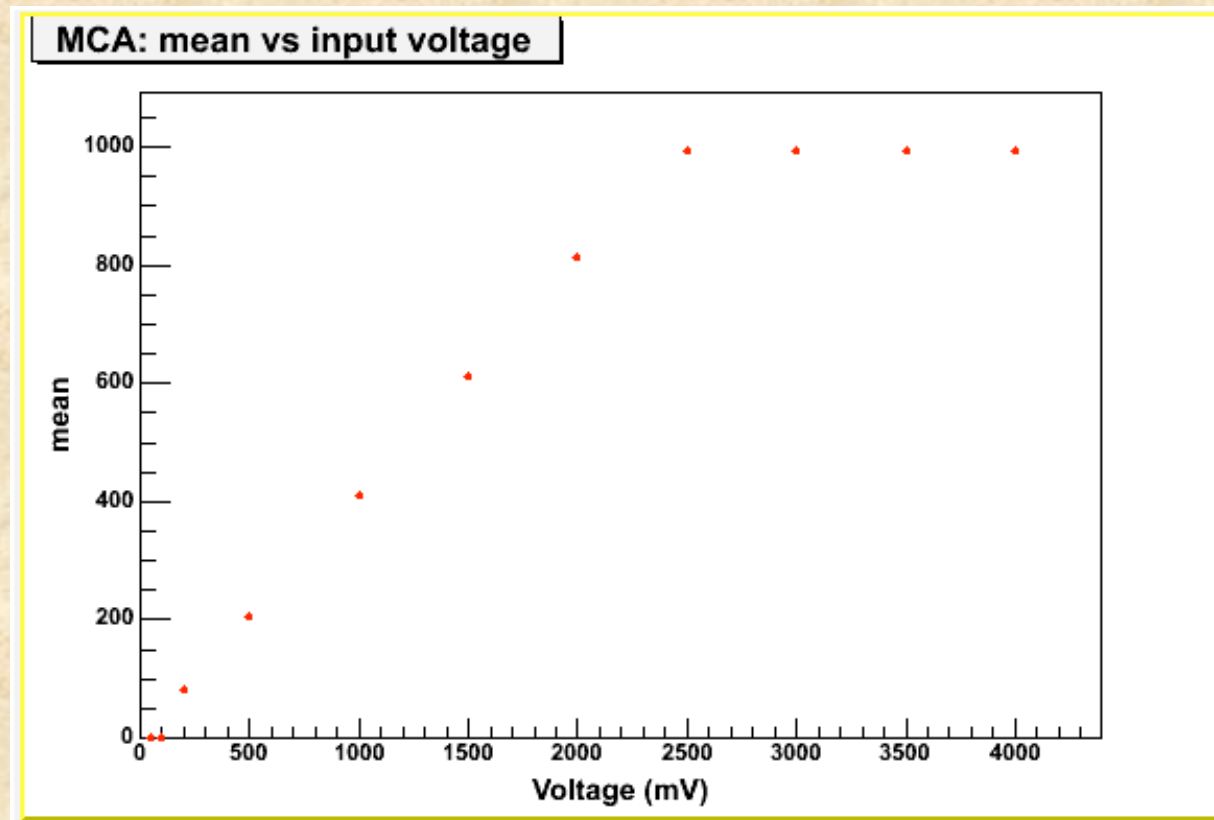
MCA output . Input: 3.5V, 1us, 10kHz. Run time: 30s



h_mca	
Entries	1000
Mean	992.5
RMS	0

Comments

- shape and # of counts as expected
- strange behaviour for amplitude higher than 2.5V (saturation in bin 993)



Conclusion

To be understood:

- bin-volt correspondence
- threshold setting for peak detection
- saturation of count in bin 993

To do:

- understand more & fix acquisition software
- try to communicate with mca bypassing Kang Li device (using Windows software supplied by AmpTek) & compare results