Status of SCA Testing

Hulin Wang

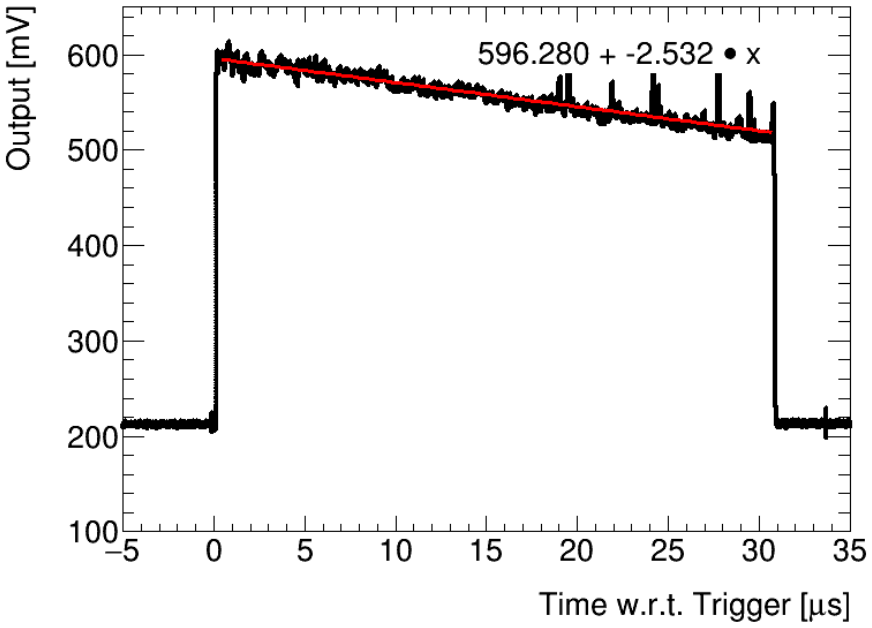
CCNU

July 22, 2020

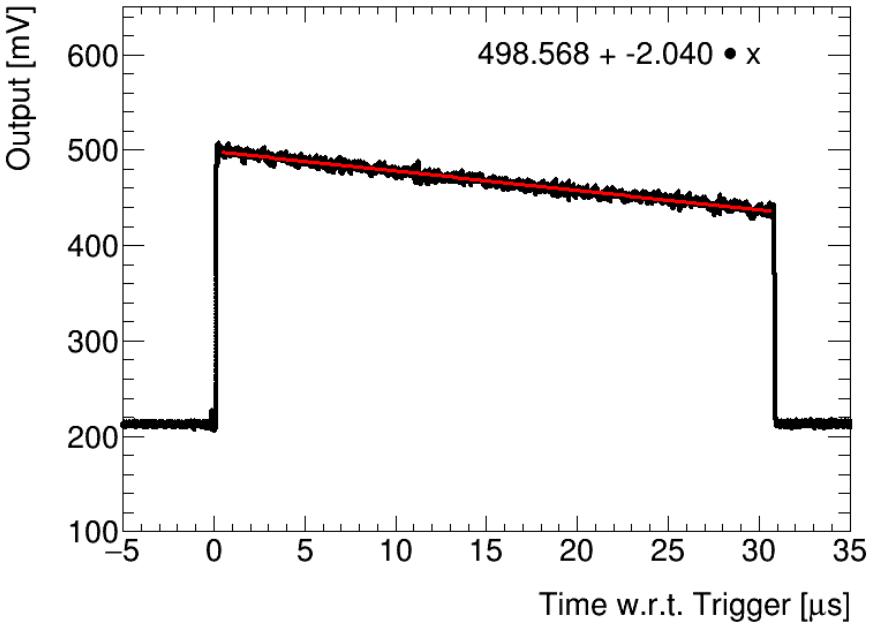
Status

- Looked into the SCA data taken with DC input and oscilloscope last week.
- Purpose: disentangle the possible effects characterize the SCA output give input
- In the oscilloscope
  - signal start to rise $\sim 0.125\mu s$ after trigger point, rise time $\sim O(0.01)\mu s$
  - start to fall $\sim 30.855\mu s$
  - readout time per cell is $0.12004\mu s$
  - in the analysis, fitting range 0.3 to 30.85 μs

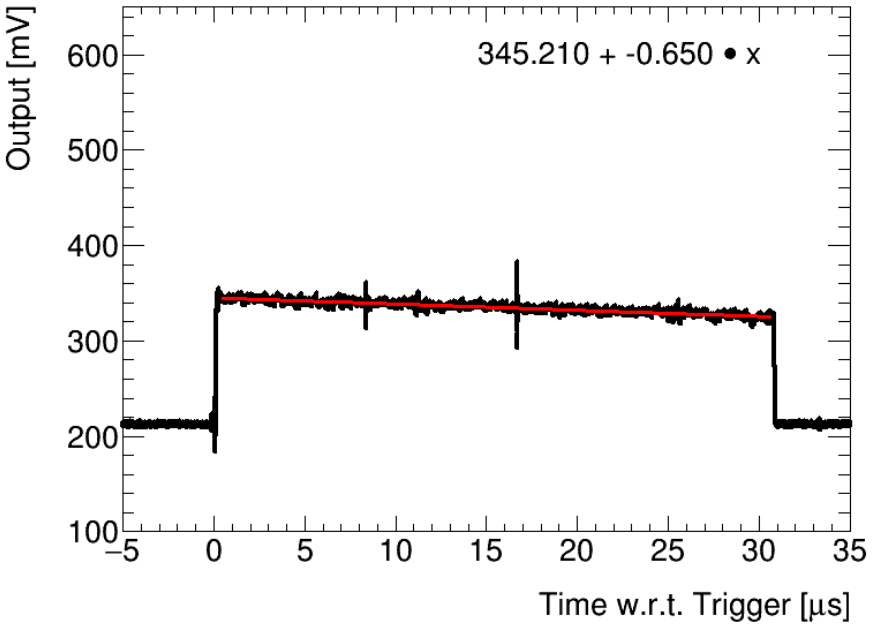
DC : 1100mV


596.280 + -2.532 • x
Output [mV]
600
500
400
300
200
100
−5
0
5
10
15
20
25
30
35
Time w.r.t. Trigger [µs]

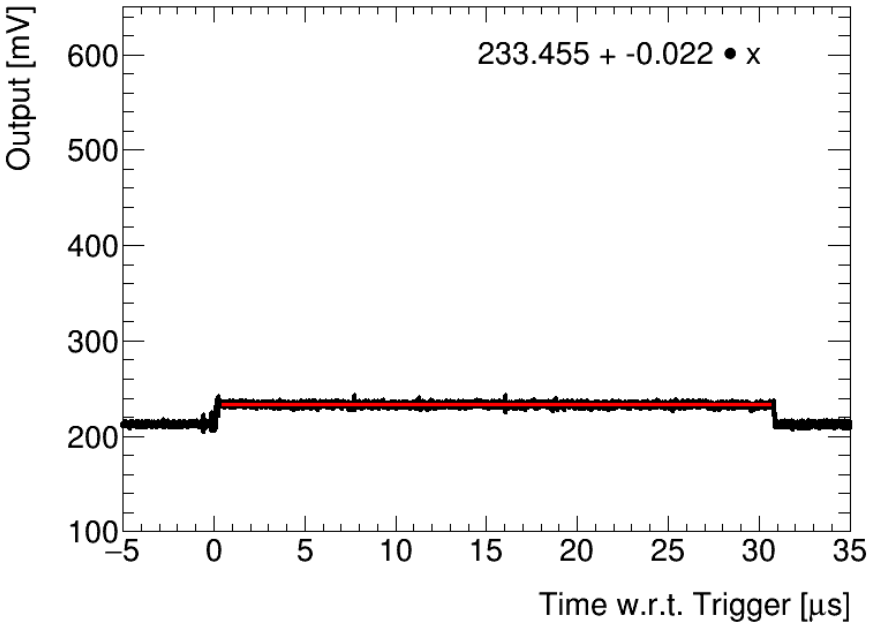
DC : 900mV


498.568 + -2.040 • x
Output [mV]
600
500
400
300
200
100
−5
0
5
10
15
20
25
30
35
Time w.r.t. Trigger [µs]

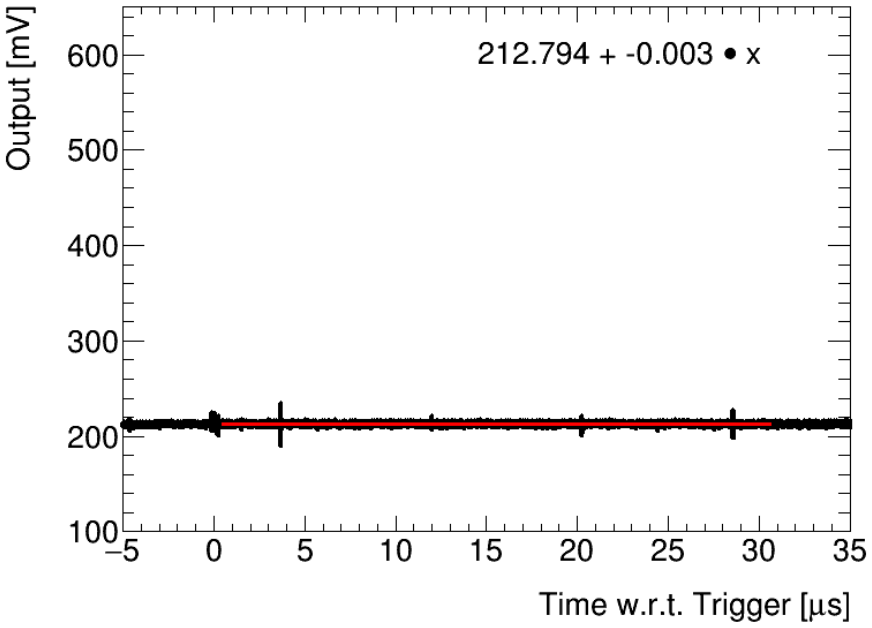
DC : 700mV


345.210 + -0.650 • x
Output [mV]
600
500
400
300
200
100
−5
0
5
10
15
20
25
30
35
Time w.r.t. Trigger [µs]

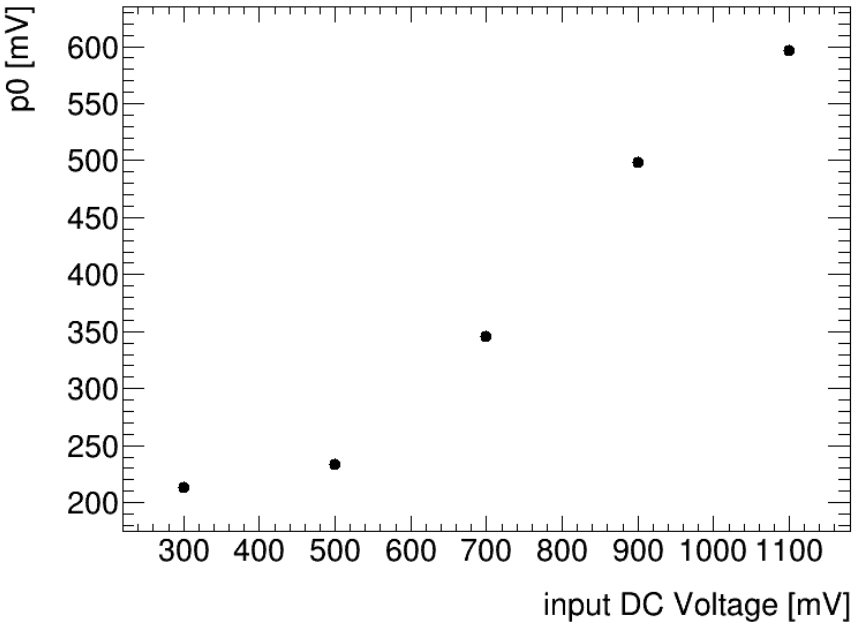
DC : 500mV


233.455 + -0.022 • x
Output [mV]
600
500
400
300
200
100
−5
0
5
10
15
20
25
30
35
Time w.r.t. Trigger [µs]

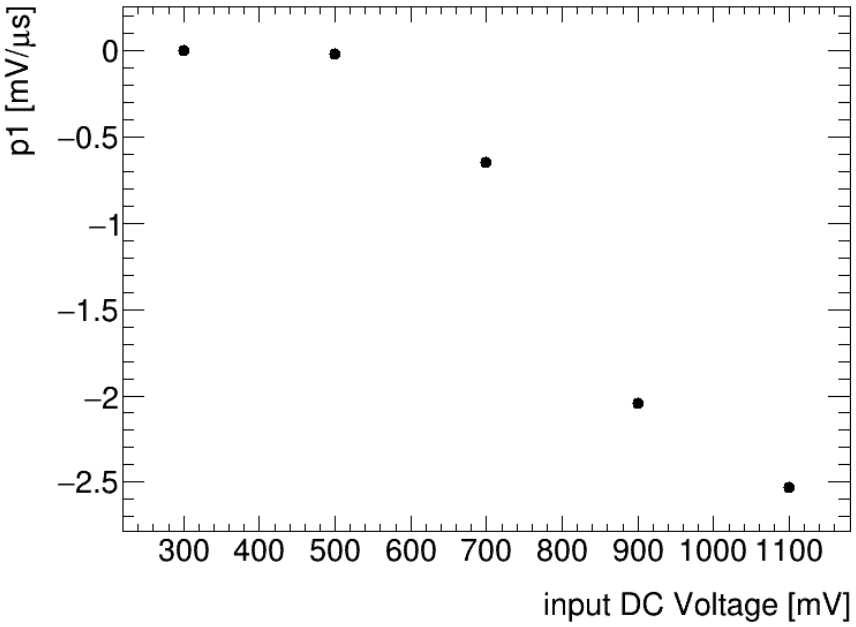
DC : 300mV


212.794 + -0.003 • x
Output [mV]
600
500
400
300
200
100
−5
0
5
10
15
20
25
30
35
Time w.r.t. Trigger [µs]

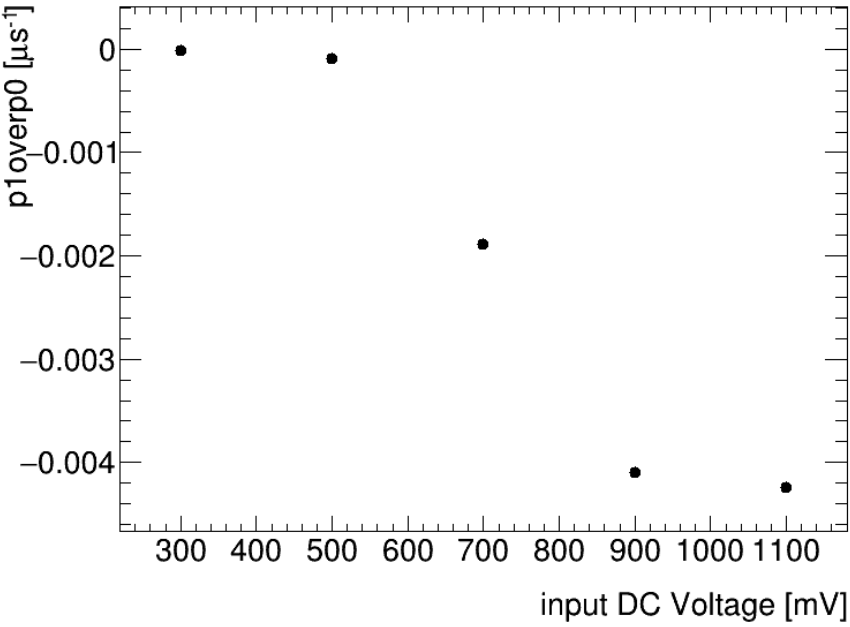
p0 VS inputV


p0 [mV]
600
550
500
450
400
350
300
250
200
300
400
500
600
700
800
900
1000
1100
input DC Voltage [mV]

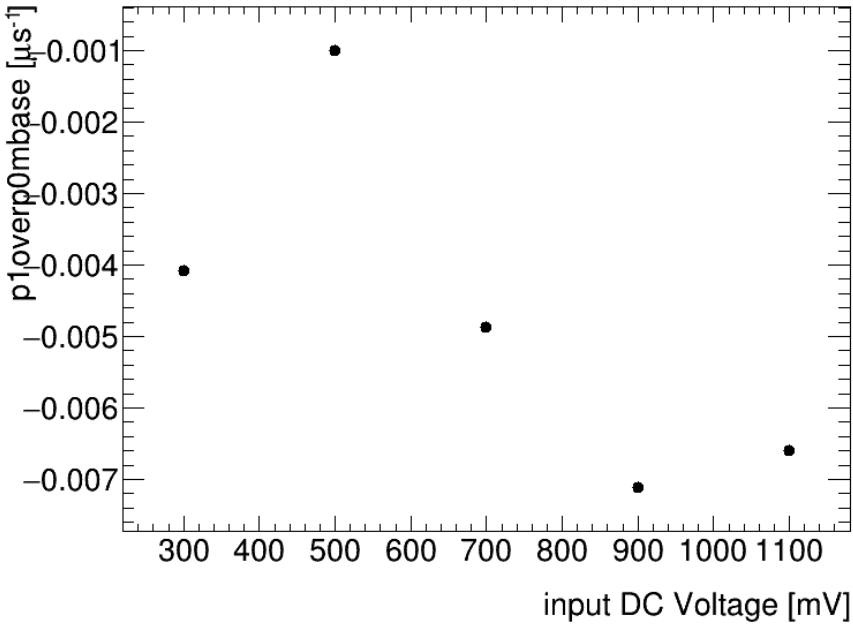
p1 VS inputV


p1 [mV/μs]
0
−0.5
−1
−1.5
−2
−2.5
300
400
500
600
700
800
900
1000
1100
input DC Voltage [mV]

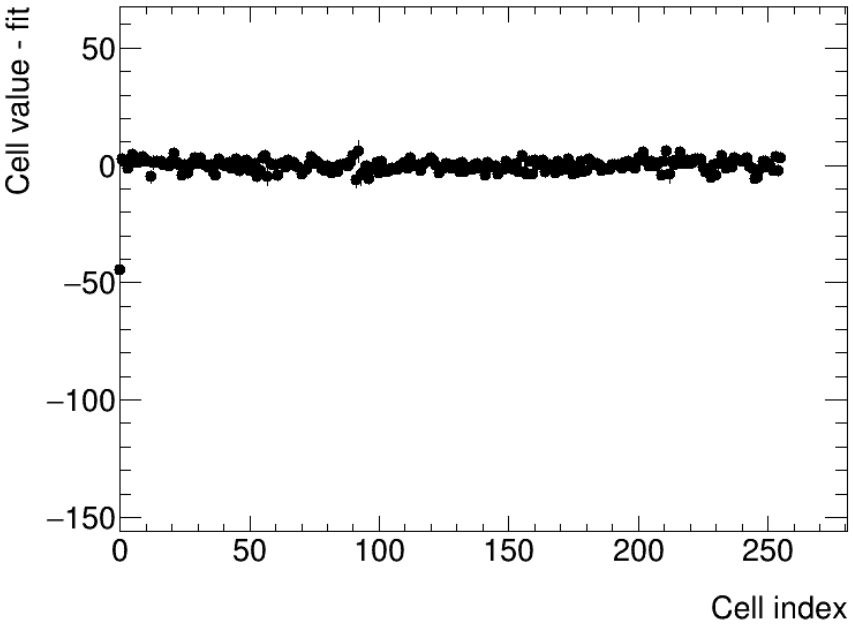
p1/p0 VS inputV



p1/(p0-212mV) VS inputV



cell value - fit value, DC900mV



Next steps

- Understand the results from the chip design and function point of view
- Set up the PC-controlled data-taking system