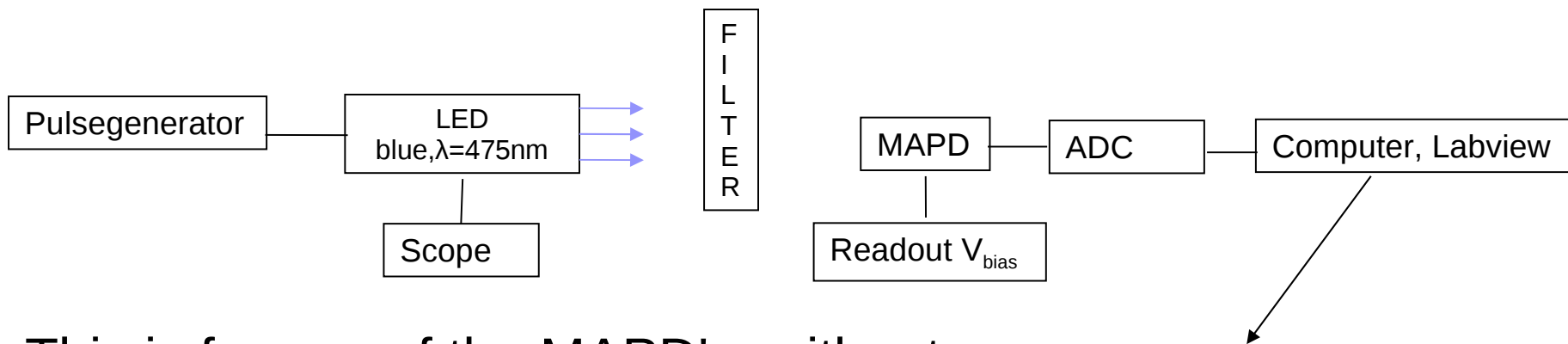
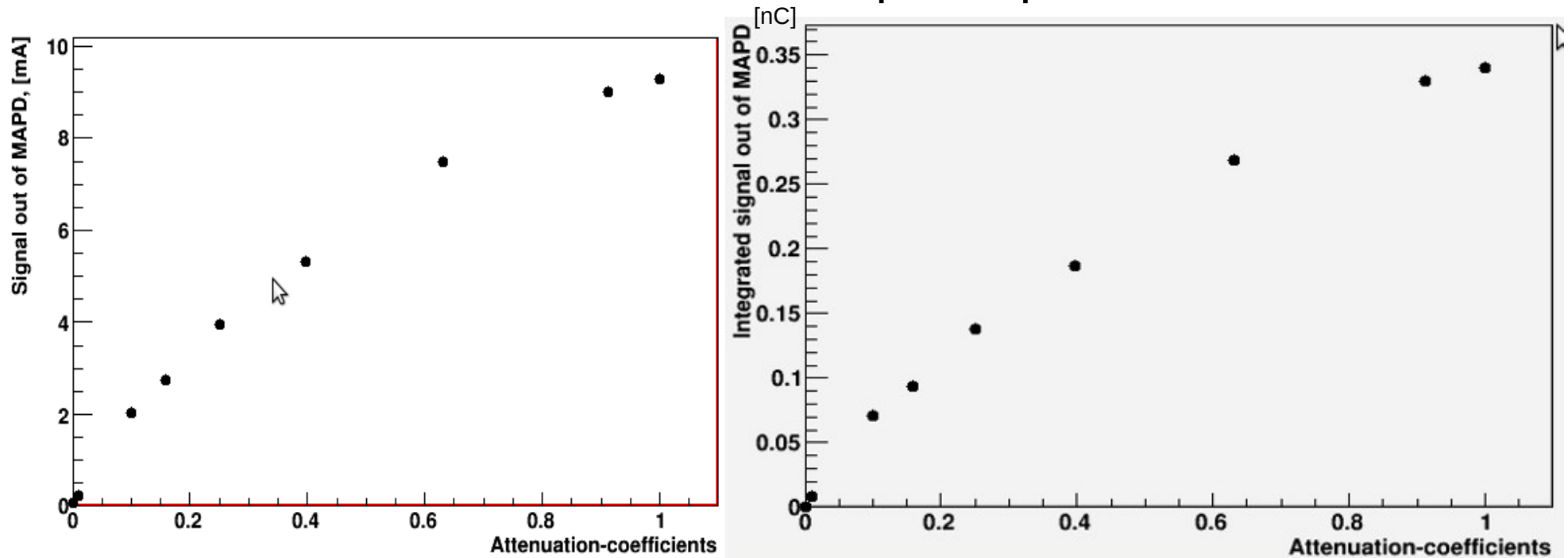


Linearity-measurements

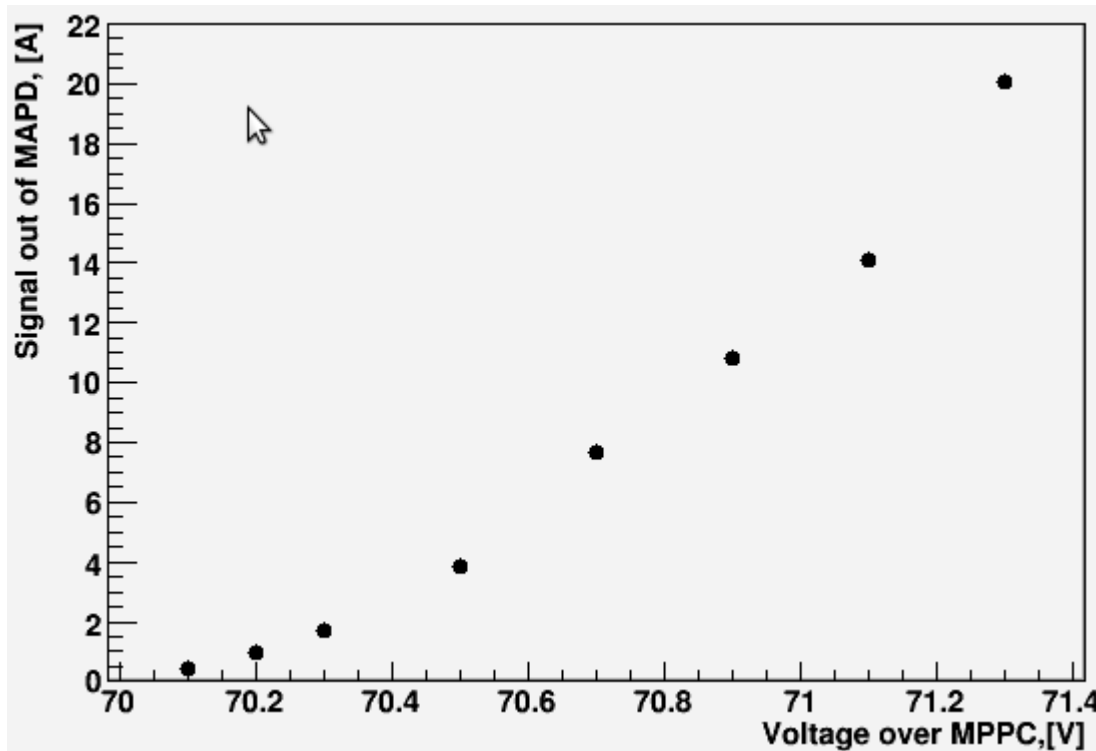
What's done so far:



This is for one of the MAPD's, without preamp:



Linearity-measurements



Fixed pulse through LED, change voltage over MPPC

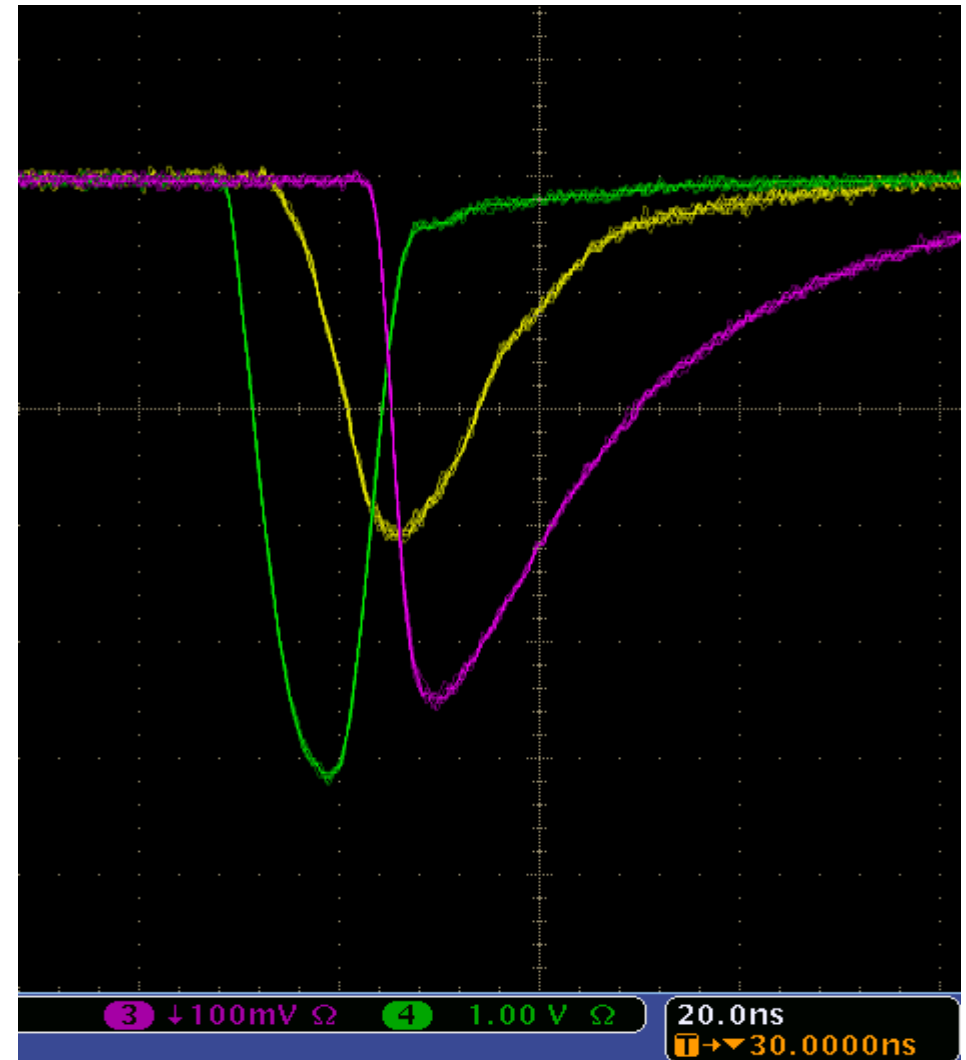
Linearity Measurements

Next Step:

- The pulse used now has long rise time and are too broad
- → Fast-switch, this will generate a narrow pulse ($\sim 2\text{ns}$)
- Assume # photons prop I_{LED}
- The measurements will cover the entire dynamical range of the MAPD/MPPC

“Problems”

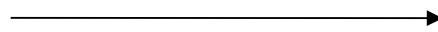
- Delay between signal from pulse-generator to signal out of MAPD



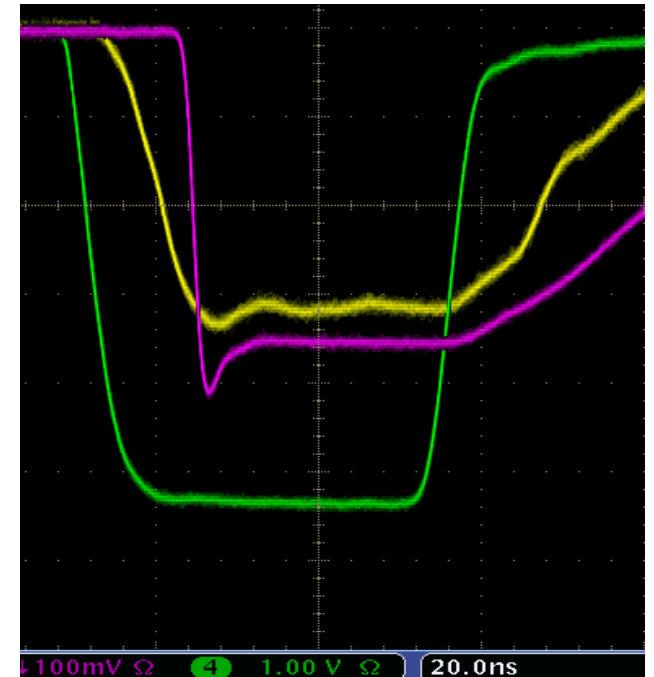
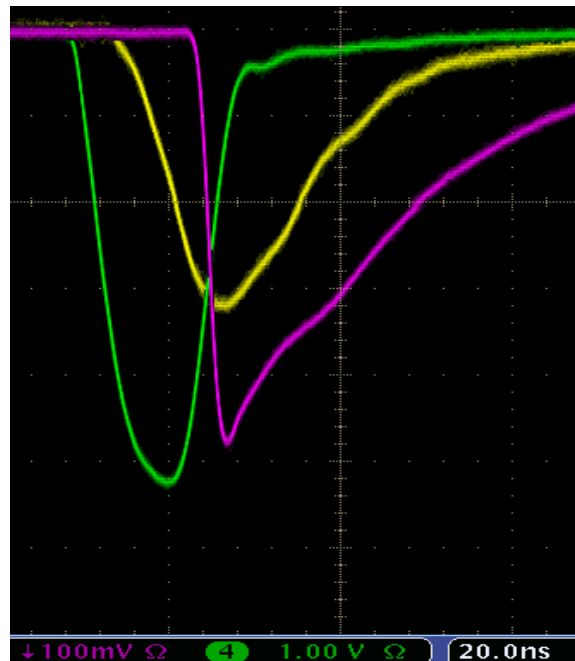
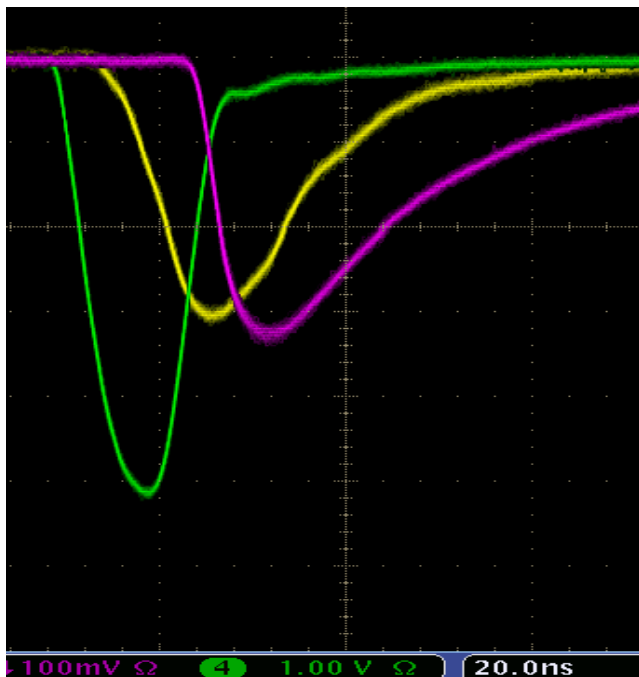
Green: Signal-generator, yellow: over LED,
purple: Signal from MPPC

“Problems”

- Delay between signal from pulse-generator to signal out of MAPD
- Not high enough repetition-time



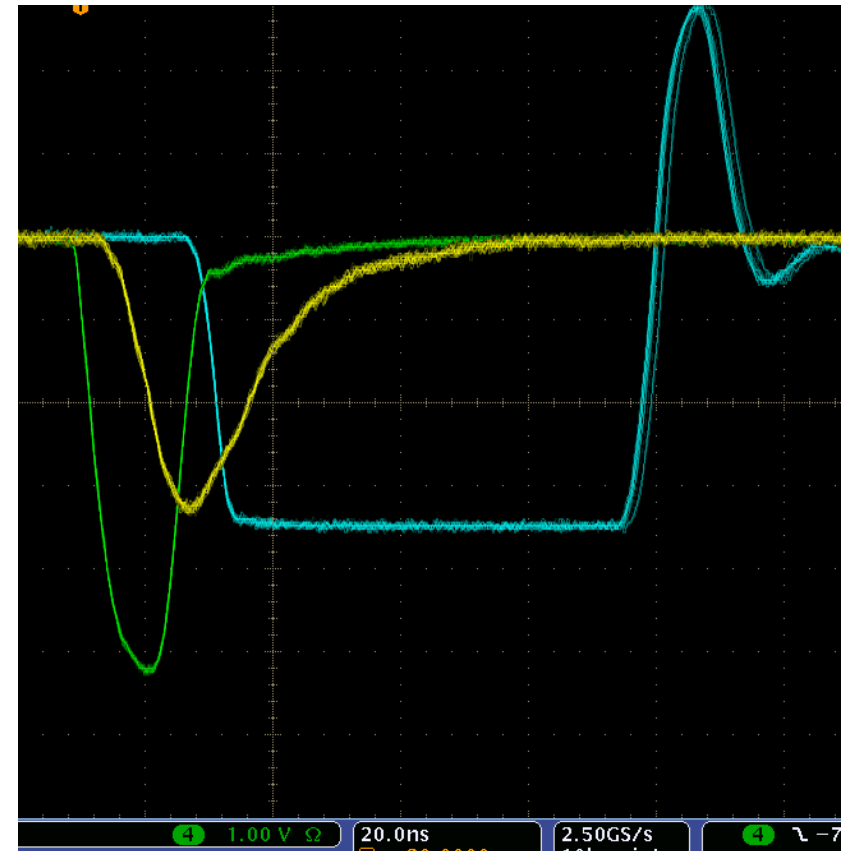
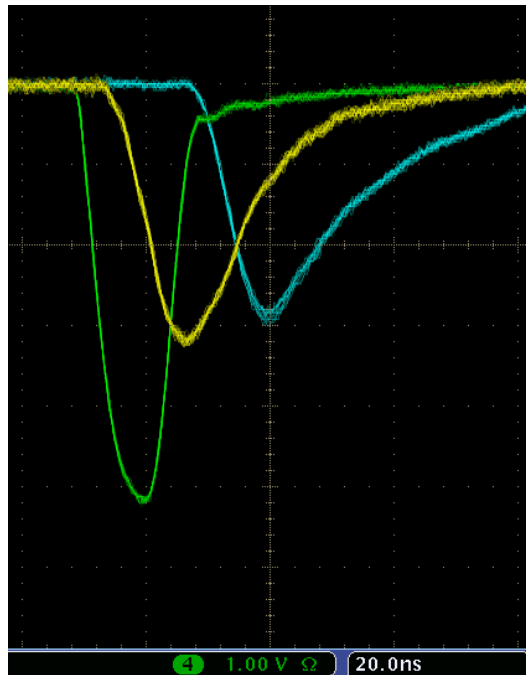
Gets better with
Repetition time $\sim 1-10\text{ms}$



Repetition time $\sim 5\mu\text{s}$. Green: Signal-generator, yellow: over LED, purple: Signal from MPPC

“Problems”

- Delay between signal from pulse-generator to signal out of MAPD
- Not high enough repetition-time
- The home-made preamp for the MAPD’s clips signal



Green: Signal-generator, yellow: over LED, blue: Signal from MAPD

What to do next

- Measure the noise in the ADC and the system (with and without MAPD connected). This will give a gaussian curve
- When the fast switch are done, do linearity measurements again
- Finish “big” black box