

# The acousto-optic modulator GUI

A quick introduction / Q&A

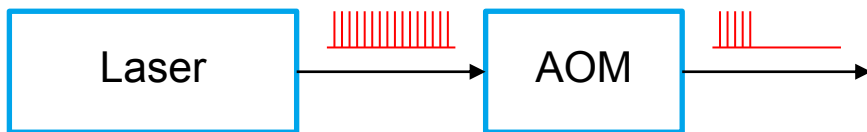
Matthias Gross

PPS

Zeuthen, 10 May 2012

# The new GUI

- > New: Laser pulse train going to accelerator is determined by laser and AOM pulse picker.
- > Procedure to set a laser pulse train:
  - Set start and stop of UV pulse train generated by laser – standard start time: 4.000 (for a series of measurements: put pulse train length to maximum of pulses needed and keep it there)
  - Set the width of the Acousto-optic pulse selector (length of laser pulse train) – leave Start at 3.996



ShapedPulse\_LaserGUI: PITZ.LASER/NEWLASER

- Power (220 V) (1) Power is on
- Oscillator ok (2) Oscillator is ok
- Regen. amplifier (3) Regen is on
- Booster amplifier (4) Booster is on
- Sampling system OSS is on

Transmission of final attenuator [%] 0 100 + 55.0 h  
=> energy of the UV pulses

Duration of the UV pulse train [us] (number of micropulses per train) + 1 h

Main Pockels switch gate  
Start + 4.000 h Stop + 4.001 h

Acousto-optic pulse selector  
Start + 3.996 h Width + 0.001 h

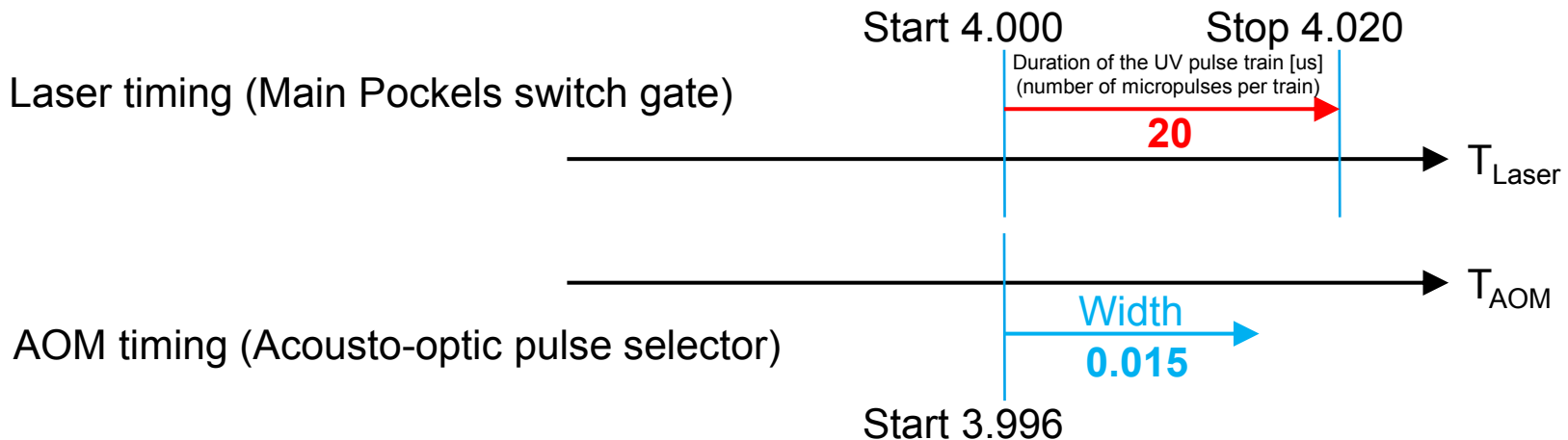
Start of the booster's pump pulse [ms] => envelope of the UV pulse train + 2.540 h

detailed settings and diagnostics shutter open

# Example 1

- Example 1: Generate 20 pulses with laser – transmit the first 15

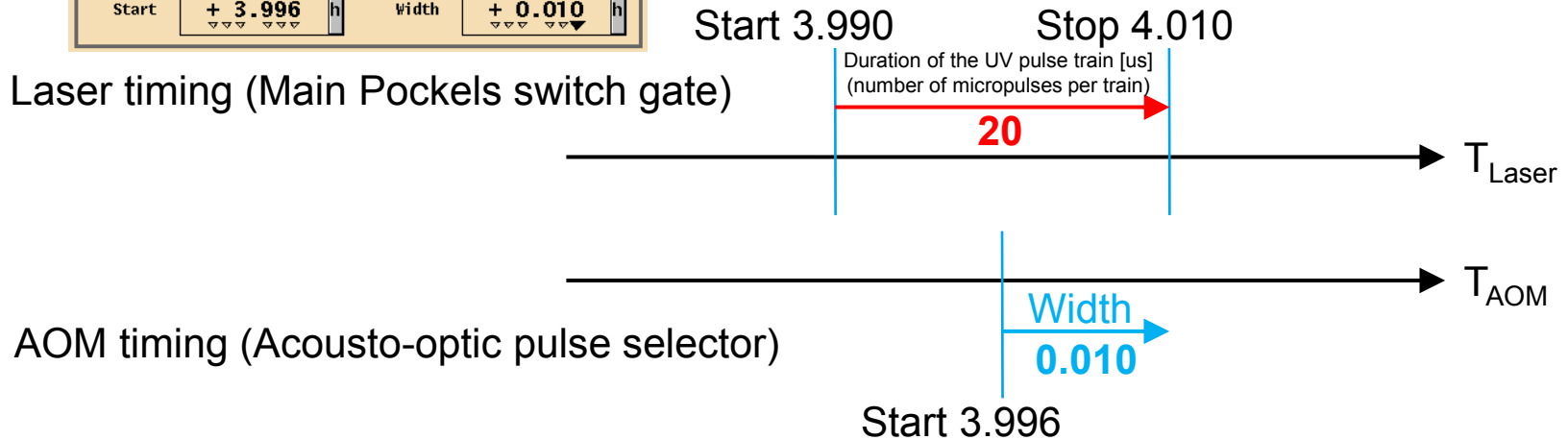
Duration of the UV pulse train [us] (number of micropulses per train)		+ 20
Main Pockels switch gate		
Start	+ 4.000	Stop + 4.020
Acousto-optic pulse selector		Width + 0.015
Start	+ 3.996	



# Example 2

- > Example 2: Generate 20 pulses with laser – transmit the last 10

Duration of the UV pulse train [us] (number of micropulses per train)	+ 20
Main Pockels switch gate	
Start + 3.990	Stop + 4.010
Acousto-optic pulse selector	
Start + 3.996	Width + 0.010



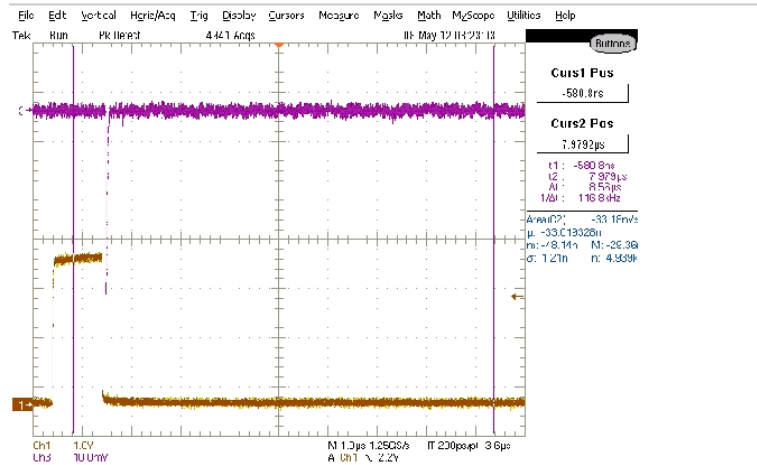
- > Start point for laser should be 4.000 but timing for cameras etc.???
- Cannot move start of Main Pockels cell more than a few us without messing up laser timing



# Results from this week

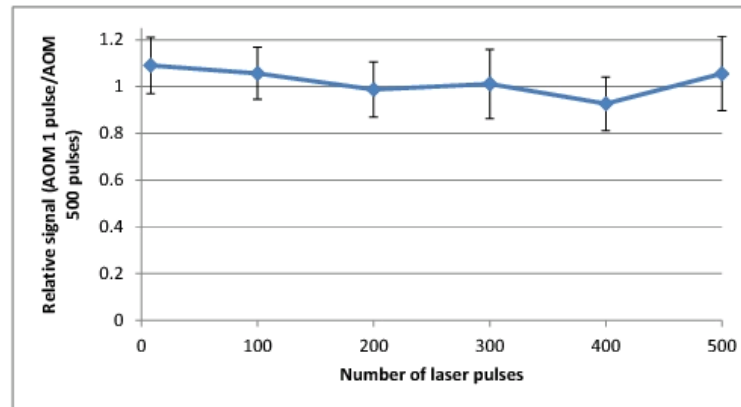
08.05.2012 07:53 M. Gross, B. Marchetti **Low.ICT1 scope picture**

Laser:  
LI 30%  
8 pulses (4.000 -> 4.008)  
  
AOM:  
1 pulse: Start 3.996 - Width 0.001



08.05.2012 11:07 M. Gross, B. Marchetti **Comparison of AOM measurements**

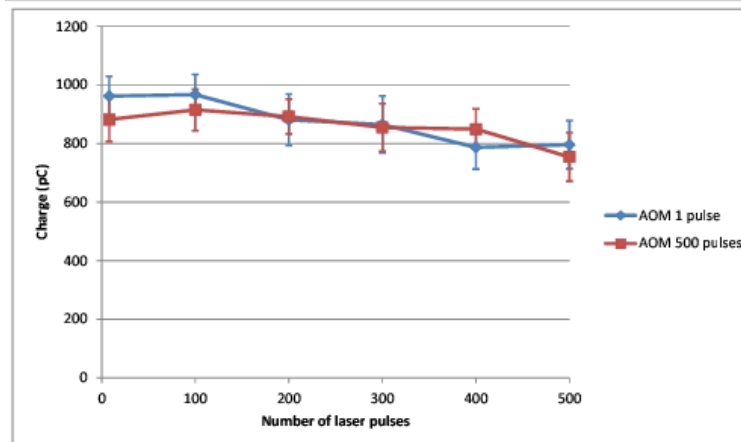
Charge signal independent of AOM gate length



08.05.2012 11:02 M. Gross, B. Marchetti **Comparison of charge measurements**

Charge of 1st laser pulse depends on total number of laser pulses (thermal impact on BBO crystal etc.)

Measured charge does NOT depend on AOM gate length



08.05.2012 08:04 M. Gross, B. Marchetti **Low.ICT1 scope picture**

Laser:  
LI 30%  
8 pulses (4.000 -> 4.008)  
  
AOM:  
4 pulses: Start 4.000 - Width 0.004

