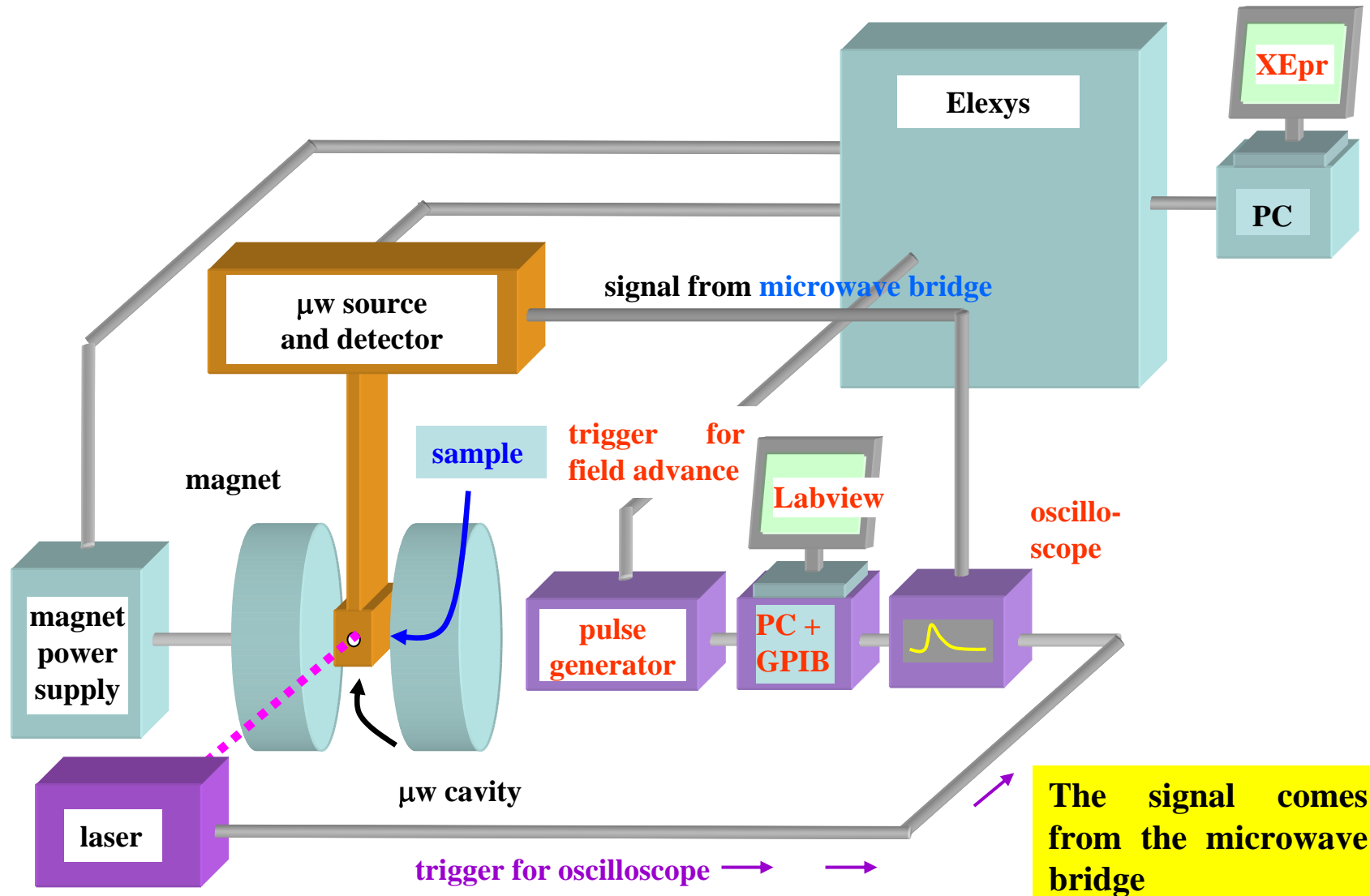


Instructions on how to set up and perform 2D-TR-EPR measurements on Elexsys

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2D-TR-EPR Instrumental set-up



2D-TR-EPR Instrumental set-up


Additional parts

- PC equipped with a GPIB board
- 2 GPIB cables
- Stanford pulse generator
- Oscilloscope
- LabView Program:
2D_TR_EPR_ext_trig.vi

Connections

- The PC equipped with the GPIB board is connected to the pulse generator through the GPIB cable

Connections

- The PC equipped with the GPIB board is connected to the oscilloscope through the GPIB cable
- The AB  output of Stanford pulse generator is connected to Elexys Signal Channel SCT/H module EXT. TRG
- The signal coming from the **microwave bridge** is collected in channel 1 of the oscilloscope
- The trigger coming from the **laser** is entering in channel 2 (or ext) of the oscilloscope

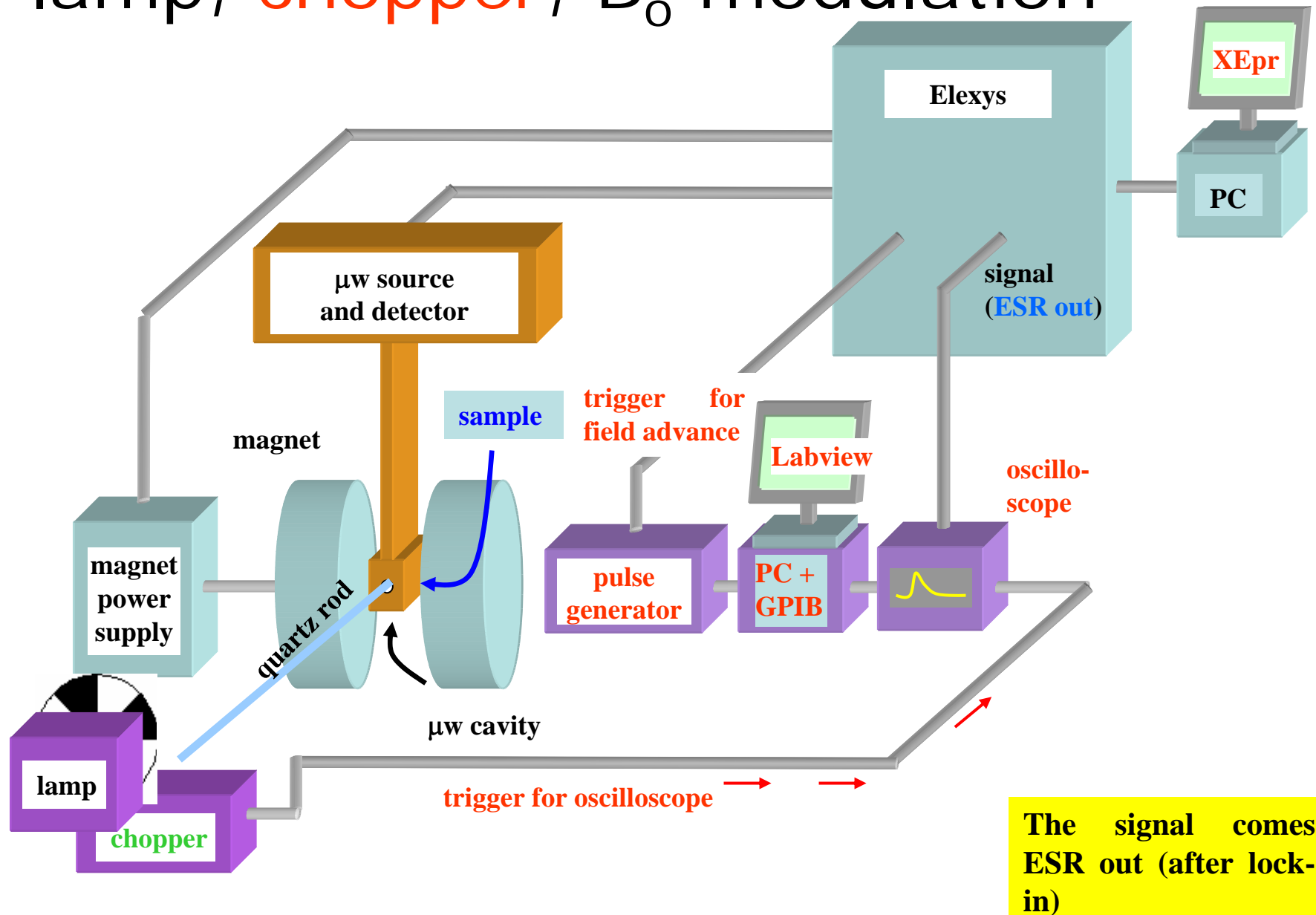
2D_TR_EPR_ext_trig.vi

1. Reads oscilloscope parameters
2. Writes to oscilloscope the number of accumulations to average in a definite trace
3. Sets the number of points to save along time
4. Sets the number of steps in the magnetic field B_0
5. Reads from the oscilloscope the averaged trace
6. Shows the averaged trace for each field position
7. Sends the single shot command to the pulse generator (Stanford)
8. Shows a section along field at a definite delay from the laser pulse while the experiment is running
9. Saves two files: one in binary format (more compact) one in Ascii format (spreadsheet) readable by every platform

How to perform the experiment

- Turn on all the instruments and connect them as explained
- In XEpr:
 1. Set 2D-experiment in New Experiment (abscissa 1:time, abscissa 2:field)
 2. Set time parameters (time:0.08 s, points:512)
 3. Set field parameters (as needed)
 4. Set **external trigger** for acquisition (in signal channel, signal I/O)
- In the oscilloscope
 1. Visualize channel 1 and function E
 2. Set the time parameters (as needed)
- Shoot the laser
- Fix the trigger (if necessary) in the oscilloscope
- In Labview
 1. Set the number of accumulations
 2. Set the number of points to save for each transient
 3. Set the same number of steps in the field set in XEpr, central field, and sweep
 4. Set the time to wait before getting the function E (sufficient to perform the accumulations)

2D-(TR)-EPR instrumental set-up: lamp, chopper, B_0 modulation




2D-(TR)-EPR Instrumental set-up: lamp, chopper, B_0 modulation

Additional parts

- PC equipped with a GPIB board
- 2 GPIB cables
- Stanford pulse generator
- Lamp
- Chopper
- Oscilloscope
- LabView Program:
2D_TR_EPR_ext_trig.vi

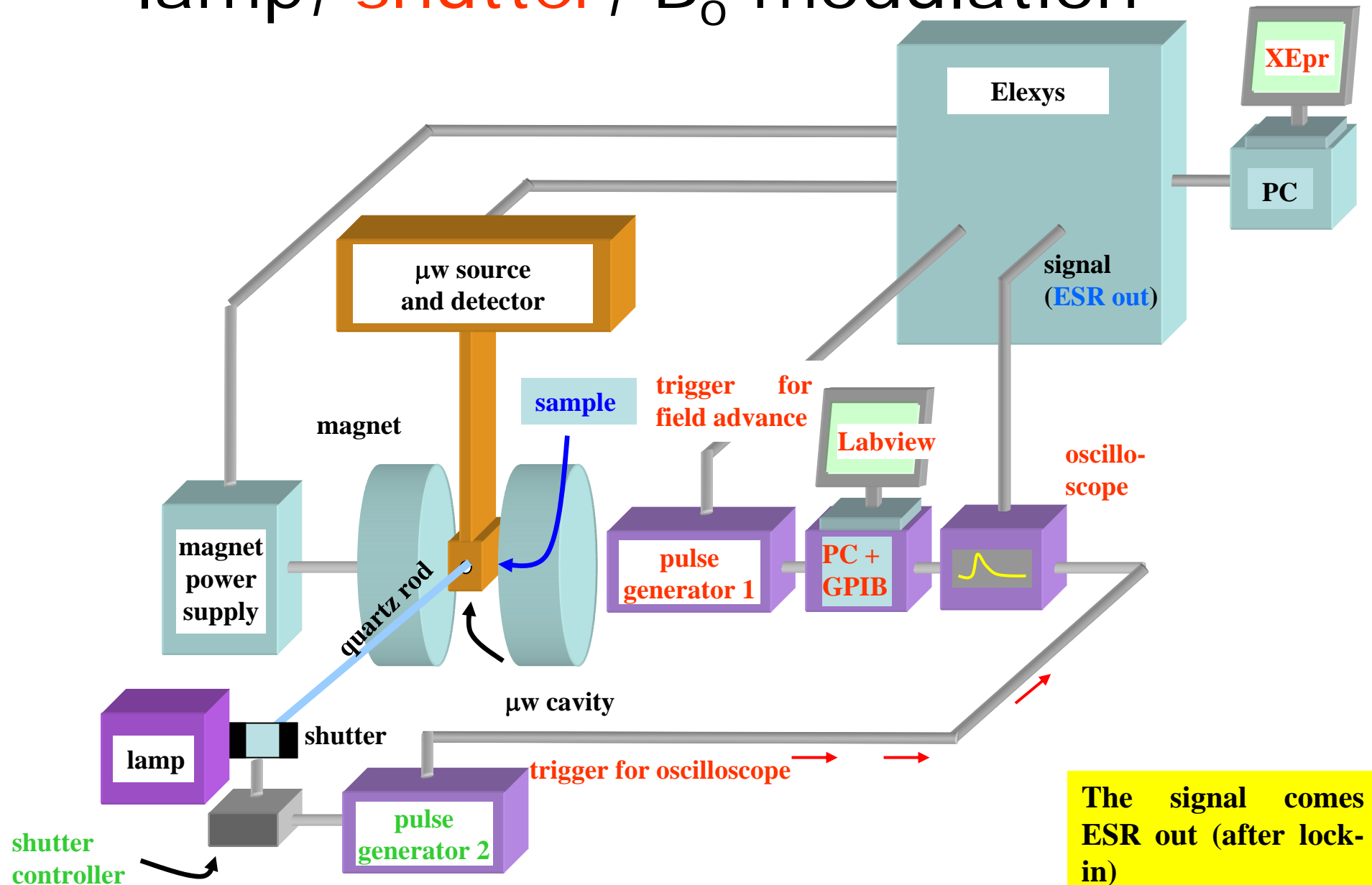
Connections

- The PC equipped with the GPIB board is connected to the pulse generator through the GPIB cable
- The PC equipped with the GPIB board is connected to the oscilloscope through the GPIB cable
- The AB  output of Stanford pulse generator 1 is connected to Elexys Signal Channel SCT/H module EXT. TRG
- The signal coming from the ESR OUT is collected in channel 1 of the oscilloscope
- The trigger coming from the chopper is entering in channel 2 (or ext) of the oscilloscope

How to perform the experiment

- Turn on all the instruments and connect them as explained
- In XEpr:
 1. Set 2D-experiment in New Experiment (abscissa 1:time, abscissa 2:field)
 2. Set time parameters (time:0.08 s, points:512)
 3. Set field parameters (as needed)
 4. Set **external trigger** for acquisition (in signal channel, signal I/O)
- In the oscilloscope
 1. Visualize channel 1 and function E
 2. Set the time parameters (as needed)
- Choose suitable frequency turning the knob on the chopper and run the chopper
- Fix the trigger (if necessary) in the oscilloscope
- In Labview
 1. Set the number of accumulations
 2. Set the number of points to save for each transient
 3. Set the same number of steps in the field set in XEpr, central field, and sweep
 4. Set the time to wait before getting the function E (sufficient to perform the accumulations)

2D-(TR)-EPR instrumental set-up: lamp, shutter, B_0 modulation






2D-(TR)-EPR instrumental set-up: lamp, shutter, B_0 modulation

Additional parts

- PC equipped with a GPIB board
- 2 GPIB cables
- 2 Stanford pulse generator
- Lamp
- Shutter+shutter controller
- Oscilloscope
- LabView Program:
2D_TR_EPR_ext_trig.vi

Connections

- The PC equipped with the GPIB board is connected to the pulse generator 1 triggering the field advance through the GPIB cable
- the AB  output of pulse generator 2 is connected to the shutter controller

- The PC equipped with the GPIB board is connected to the oscilloscope through the GPIB cable
- The AB  output of Stanford pulse generator 1 is connected to Elexys Signal Channel SCT/H module EXT. TRG
- The signal coming from the ESR OUT is collected in channel 1 of the oscilloscope
- The trigger A  coming from the pulse generator 2 (triggering the shutter controller) is entering in channel 2 (or ext) of the oscilloscope

How to perform the experiment

- Turn on all the instruments and connect them as explained
- In XEpr:
 1. Set 2D-experiment in New Experiment (abscissa 1:time, abscissa 2:field)
 2. Set time parameters (time:0.08 s, points:512)
 3. Set field parameters (as needed)
 4. Set **external trigger** for acquisition (in signal channel, signal I/O)
- In the oscilloscope
 1. Visualize channel 1 and function E
 2. Set the time parameters (as needed)
- Run the shutter (choose suitable frequency and light period in pulse generator 2)
- Fix the trigger (if necessary) in the oscilloscope
- In Labview
 1. Set the number of accumulations
 2. Set the number of points to save for each transient
 3. Set the same number of steps in the field set in XEpr, central field, and sweep
 4. Set the time to wait before getting the function E (sufficient to perform the accumulations)