TELBE beamtime 12.06.2018: night shift

Notebook:	Old TELBE Notebook (1)		
Created:	12.06.2018 21:43	**Updated:**	28.07.2018 20:01
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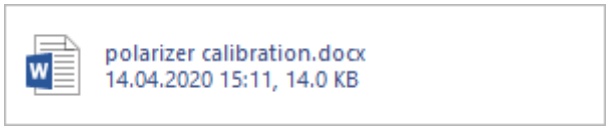
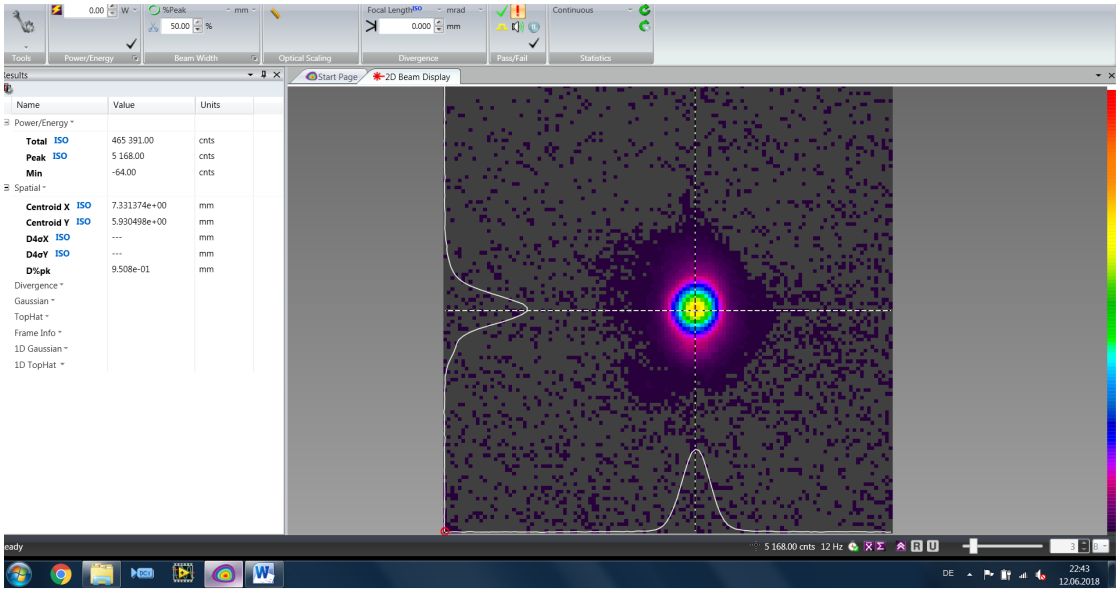
NA/SK:

21:45 setting up pyro detector for intensity fluctuations
pyro level upto -0.7 V
removed HWP from the path and put 2 wire grid polarizers (tunable) for polarization and fluence control.

Calibration for polarizers is done. See the attached word document.
polarizer 0 - fixed for pyro!





22:40
Poalrizer 1 at 155°
polarizer 2 at 50°

power - 102 mW (without filter)
power - 41,5 mW (with filter)
power - 30 mW (with 2 filters)
power BDA - 108.5 mW

THz Spot size- 950 μm (with filter) at sample position.
Overlapping of 800nm probe, THz beam and green alignment laser done.

AT ZnTe detection position:
THz spot size - 1,3 mm
THz power with 2 filters - 21 mW
wire grid poalrizers on the cage - vertically oriented

23:00 ND 10 on probe, one arm signa 350 mV, THz dimmed using poalrizer1. polaritzer 1 at 230deg.
EOS scans, start 61 mm, 150 steps, -0,1 mm step size, gain 1
file: 017_0p7THz_EOS_2mmZnTe_2xBP_gain1

Put 2 * 2.1THz filter in detection and redo EOS, 1st polarizer at 155 deg, second polarizer 50deg
EOS scans, start 61 mm, 150 steps, -0,1 mm step size, gain 20
file: 018_0p7THz_EOS_2mmZnTe_2xBP_gain20_2x2THz_BP

11:50 Moved the sample in the position
Started cooling the sample.
Decided to measure while cooling the sample.
EOS scans, start 61 mm, 150 steps, -0,1 mm step size, gain 20
file: 019_0p7THz_LSCO_2mmZnTe_2xBP_gain20_2x2THz_BP_test

00:30 Sample temperature 19K, cold finger at 4.2K
Overlapping checked.
Waiting for temperature to stabilize.

sample temperature 16K
2 x 0.7 THz BP filter in Pump, 2 x 2 THz BP filters in detection.
1st polarizer at 155 deg, second polarizer 50deg
wire grid poalrizers on the detection cage - vertically oriented

start 61 mm, 150 steps, -0,1 mm step size, gain 20
file: 020_0p7THz_LSCO_2mmZnTe_16K_gain20

01:00
sample temp - 25K
start 61 mm, 150 steps, -0,1 mm step size, gain 20
file: 021_0p7THz_LSCO_2mmZnTe_25K

sample temperature - 30K
start 61 mm, 150 steps, -0,1 mm step size, gain 20
file: 022_0p7THz_LSCO_2mmZnTe_30K

sample temperature - 35K
start 61 mm, 150 steps, -0,1 mm step size, gain 20
file: 023_0p7THz_LSCO_2mmZnTe_35K

02:00 set temperatuere to 40K
reduced the scan range: 58.5 mm, 85 steps, -0,1 mm step size
file: 024_0p7THz_LSCO_2mmZnTe_40K

02:21 Set temperature to 30K, highest THG amplitude. And do fluence dependence here.
temperature 30.3K, poalrizer 1 at 155deg, power - 106 mW
reduced the scan range: 58.5 mm, 85 steps, -0,1 mm step size
file: 025_0p7THz_LSCO_2mmZnTe_30p3K

Polarizer at 190deg
sample at 30.2K
reduced the scan range: 58.5 mm, 85 steps, -0,1 mm step size
file: 026_0p7THz_LSCO_2mmZnTe_30p2K

03:03 Change polarizer to 210 deg
sample temperature 30K
reduced the scan range: 58.5 mm, 85 steps, -0,1 mm step size
file: 027_0p7THz_LSCO_2mmZnTe_30K

changed polarizer to 220deg, power - 107 mW
sample temperature 30K
reduced the scan range: 58.5 mm, 85 steps, -0,1 mm step size
file: 028_0p7THz_LSCO_2mmZnTe_30K

03:29 polarizer at 230deg
sample temperature 29.9K
reduced the scan range: 58.5 mm, 85 steps, -0,1 mm step size
file: 029_0p7THz_LSCO_2mmZnTe_29p9K

Changed polarizer to 200 deg
sample temperature 29.9K, power 106 mW
reduced the scan range: 58.5 mm, 85 steps, -0,1 mm step size
file: 030_0p7THz_LSCO_2mmZnTe_29p9K

Took out 155 μm filter, and redo above scan at polarizer 155 deg
reduced the scan range: 58.5 mm, 85 steps, -0,1 mm step size
file: 031_0p7THz_LSCO_2mmZnTe_29p9K

04:15 Decided to d**o temperature scan at polarizer at 190 deg** and only 2.1 THz BP filter in detection.
reduced the scan range: 58.5 mm, 85 steps, -0,1 mm step size
file: 032_0p7THz_LSCO_2mmZnTe_29p9K

Set temperature to 15K.
scan range: 58.5 mm, 85 steps, -0,1 mm step size, polarizer at 190 deg
file: 033_0p7THz_LSCO_2mmZnTe_15p7K

set to 20K
04:50
power - 88 mW, asked operators to try to optimize it.
power after tuning - 108 mW
scan range: 58.5 mm, 85 steps, -0,1 mm step size, polarizer at 190 deg
file: 034_0p7THz_LSCO_2mmZnTe_20p3K

05:00 set temperature - 25K
power - 110 mW
scan range: 58.5 mm, 85 steps, -0,1 mm step size, polarizer at 190 deg
file: 035_0p7THz_LSCO_2mmZnTe_24p5K
temperature at the end of the scan - 24,7K

set temperature to 27K
power - 111 mW
scan range: 58.5 mm, 85 steps, -0,1 mm step size, polarizer at 190 deg
file: 036_0p7THz_LSCO_2mmZnTe_26p8K

power - 113mW
set temperature - 29K
scan range: 58.5 mm, 85 steps, -0,1 mm step size, polarizer at 190 deg
file: 037_0p7THz_LSCO_2mmZnTe_29K

05:30 set temperature to 31K
power - 112.5 mW
scan range: 58.5 mm, 85 steps, -0,1 mm step size, polarizer at 190 deg
file: 038_0p7THz_LSCO_2mmZnTe_31K

set temperature to 33K
scan range: 58.5 mm, 85 steps, -0,1 mm step size, polarizer at 190 deg
file: 039_0p7THz_LSCO_2mmZnTe_33K
temperature at the end 33,3K

Set temperature to 35K
power - 104mW
scan range: 58.5 mm, 85 steps, -0,1 mm step size, polarizer at 190 deg
file: 040_0p7THz_LSCO_2mmZnTe_35p2K
temperature at the end 35,4K

Set temperature to 37K
power 106 mW
scan range: 58.5 mm, 85 steps, -0,1 mm step size, polarizer at 190 deg
file: 041_0p7THz_LSCO_2mmZnTe_37p4K
temperature at the end 37,4K

Set temperature to 39K
power 105 mW
scan range: 58.5 mm, 85 steps, -0,1 mm step size, polarizer at 190 deg
file: 042_0p7THz_LSCO_2mmZnTe_39p6K
temperature at the end

06:17
power - 107mW, slighlty shifted the timing signal
scan range: 58.5 mm, 85 steps, -0,1 mm step size, polarizer at 190 deg
file: 043_0p7THz_LSCO_2mmZnTe_41p6K

Fluence dependence of THG and Fundamental extracted from FFT at T = 30K:

entries for temperature 43K, 47K and 50 K are lost in evernote synchronization issues.
Power for these measurements were between 104 mW-106 mW, all other details are wrote in txt note file in data file.