Electro Optic Sampling at TTF2
- Recent results -

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DESY
Overview

• First Scans
• Spectral decoding
  – Arrivaltime jitter
  – Charge dependence
  – ACC1 Phase dependence
• First GaP tests
First EO-Signal Feb. 05
First Scans

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First Scans

No bunch profile detectable due to time jitter. Need for single shot measurement!

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Sources for time jitter:
energy jitter in the bunch compressors
Sources for time jitter:
laser synchronisation

Resulting jitter $\approx 100\text{fs}$
Spectral decoding

300 consecutive bunches on June 5th,
off crest,
1 nC
Spectral decoding

Peak separation approx. 650fs, first peak 650fs (FWHM)
Arrival time of the bunch from EOSD data

Arrivaltime jitter: 200 fs (rms)
LOLA

Peak separation approx. 900fs, first peak 350fs (FWHM)
Spectral decoding
Arrival time of the bunch from EOSD data

Arrivaltime jitter: 530 fs (rms)
Signal dependence on bunch charge

Signal dependence on bunch charge

![Graph showing signal dependence on bunch charge](imageURL)

- Signal amplitude (arb. units)
- Time in ps

Values:
- 0.5nC
- 0.9nC
- 0.7nC

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Bunch shape dependence on ACC1 Phase

Changing ACC1 Phase Setpoint

-2deg
-1deg
+0deg
+2deg

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First tests with GaP

ZnTe:  
  \( r=14\text{mm} \)  
  \( d=100\mu\text{m} \)

GaP:  
  \( r=10\text{mm} \)  
  \( d=100\mu\text{m} \)

Time calibration was not possible due to an unstable arrival time: need of an independent time calibration!