Introduction to TCT and edge-TCT workshop

DESY
5.- 6.10.2015

Susanne Kuehn

Albert-Ludwigs-Universität Freiburg

ESF
Chancen fördern
EUROPÄISCHER SOZIALFONDS
IN BADEN–WÜRTTEMBERG

Baden-Württemberg
MINISTERIUM FÜR WISSENSCHAFT, FORSCHUNG UND KUNST

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Aim of the workshop
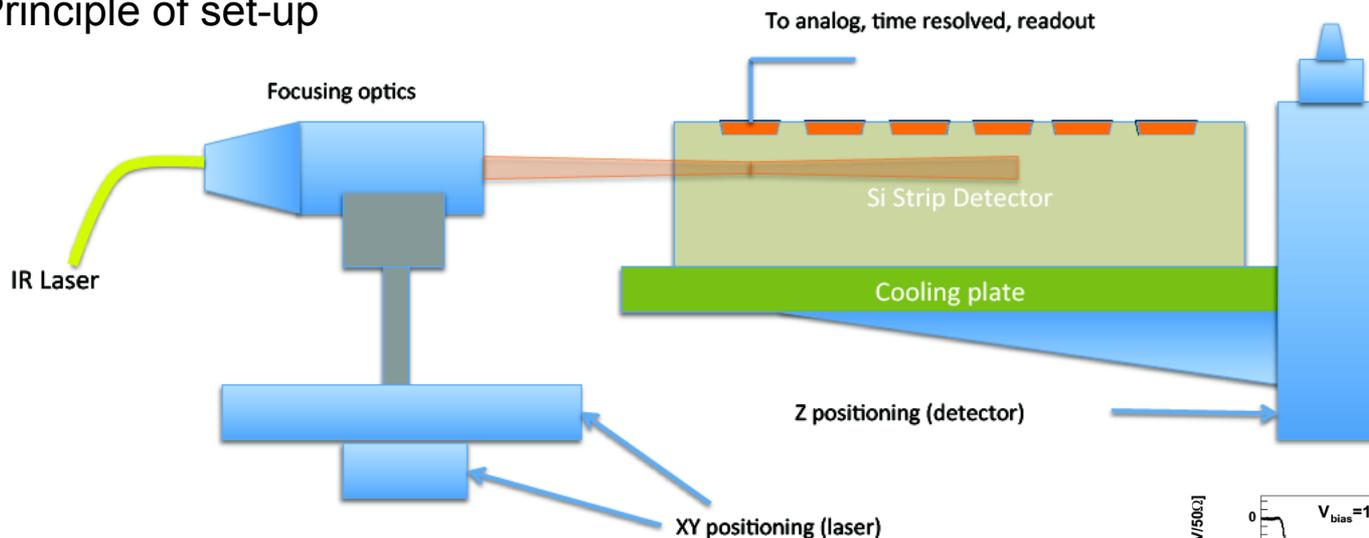
- Collect and exchange knowledge and experience of setting up and performing edge-TCT measurements

    - Talks

    - Hands-on sessions in lab (split in groups)

- Talks on theory of measurements and simulation

- Discussion about share of further common task (common code)

- Manual

Edge-TCT

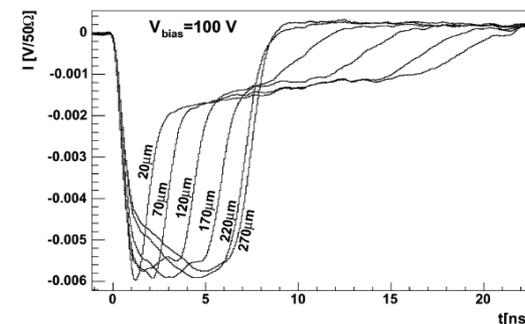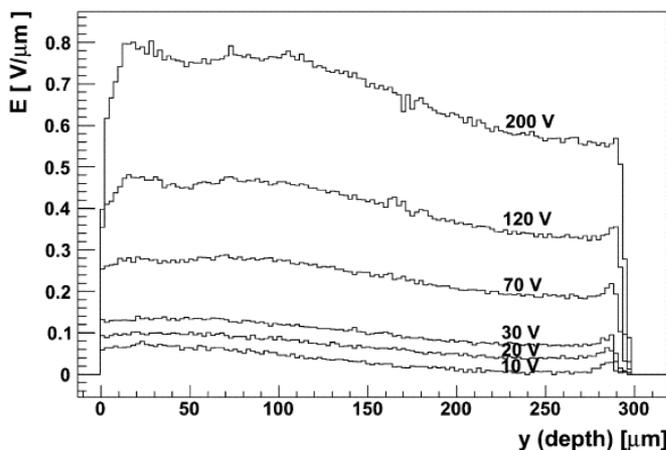Albert-Ludwigs-Universität Freiburg

- Principle of set-up

Method by G. Kramberger et al., IEEE TNS, VOL. 57, NO. 4, August 2010, p. 2294

From: PhD thesis of Nicolo Pacifico

- Signal formation

$$I_{e,h}(t) = e_0 A N_{e,h} exp \left(-\frac{t}{\tau_{eff_{e,h}}} \right) \vec{v}_{e,h}(t) \cdot \vec{E}_w$$

- Exemplary result for electric field

Monday 05 October 2015

13:00 - 13:30   Registration
Location: SR3

13:30 - 13:35   Welcome
Location: SR3

    13:30   **Welcome** *05'*
            Speaker: Hendrik Jansen (DESY)

13:35 - 15:40   Introduction to setup and preparation of measurements
Location: SR3

    13:35   **Introduction to TCT and edge-TCT workshop** *15'*
            Speakers: Susanne Kuehn (University of Freiburg) , Susanne Kuehn (Univ. Freiburg)

    13:50   **Hardware description: Particulars system** *20'*
            Setup components, general hardware description, laser monitoring
            Speakers: Gregor Kramberger (Jozef Stefan Institute) , Marko Zavrtanik (Jozef Stefan Institute)

    14:10   **Harware description: CERN system** *20'*
            Speaker: Christian Gallrapp (CERN)

    14:30   **PCBs and mounts for different sensors: diode, strip sensors, CMOS** *10'*
            Speaker: Hendrik Jansen (DESY)

    14:40   **Discussion on setups** *15'*

    14:55   **Sensor preparation for edge, backside illumination** *10'*
            Speaker: Sven Wonsak (University of Liverpool)

    15:05   **DAQ + Software operation for particulars** *15'*
            Speaker: Gregor Kramberger (Jozef Stefan Institute)

    15:20   **Introduction to finding of focus** *10'*
            Speakers: Hendrik Jansen (DESY) , Gregor kramberger (Jozef Stefan Institute)

15:40 - 16:00   Coffee Break

16:00 - 18:00   Lab session: DAQ&focus for preparation of scans and sensor preparation
Split in two groups
Location: Lab2/Lab4

    16:00   **Cabling, DAQ and software operation of particulars system** *1h00'*
    17:00   **Sensor preparation** *1h00'*

19:30 - 21:30   Dinner at Mamma Mia *2h00'*
Barnerstraße 42, 22765 Hamburg

Agenda Tuesday

Tuesday 06 October 2015

09:00 - 10:45   Theoretical background of measurements and analysis software
     Location: SR1

- **09:00**   **Theoretical background for measurements** 20'
     Speakers: Gregor Kramberger (Jozef Stefan Institute) , Marko Zavrtanik (Jozef Stefan Institute)
- **09:20**   **Discussion and Questions** 10'
- **09:30**   **Simulation from Torino** 20'
     Speaker: Nicolo Cartiglia (University of Turin and INFN)
- **09:50**   **Simulation from Ljubljana** 20'
     Speakers: Gregor Kramberger (Jozef Stefan Institute) , Marko Zavrtanik (Jozef Stefan Institute)
- **10:10**   **Simulation with TRACS** 15'
     Speaker: Marcos Fernandes Garcia
- **10:25**   **Common code** 20'
     Speaker: Hendrik Jansen (DESY)

10:45 - 11:00   Tea Break

11:00 - 12:30   Lab session: Readout boards and temperature control
     Location: Lab2

- **11:00**   **Measurement of edge pulse** 30'
- **11:30**   **Readout board: DRS, Oscilloscope** 30'
- **12:00**   **Temperature control and stability: PID controller** 30'

12:30 - 14:00   Lunch Break

14:00 - 16:00   Discussion
     Please send us details on your experience, any questions, topics you want to be discussed....
     Location: SR1

- **14:00**   **Do's and Don'ts** 20'
     Speaker: Sven Wonsak (University of Liverpool)
- **14:20**   **Discussion & Questions** 20'
     Discussion on common code, what's missing, etc.
- **14:40**   **Discussion on common code development** 20'
     Speaker: Hendrik Jansen (DESY)

Minutes → Manual

- Contributions marked in red would benefit from taking minutes of discussions, technical sessions, etc.

- Looking for volunteers to make minutes and collect questions:

    – Mo: Discussion on set-ups

    – Mo: Lab session cabling, DAQ, software operation

    – Mo: Lab session Sensor polishing

    – Tue: Discussion, questions theory part

    – Tue: Lab session (2 people) measurement edge pulse, readout board, DRS, oscilloscope, temperature control

    – Tue: Do's & Don'ts

    – Tue: Discussion and common code

- Put slides and minutes together → manual