

Electro-optical diagnostics

Single-shot time-stretch electro-optic sampling at the ELBE coherent THz CDR source

Christelle Hanoun

11th Workshop on Longitudinal Electron Bunch Diagnostics

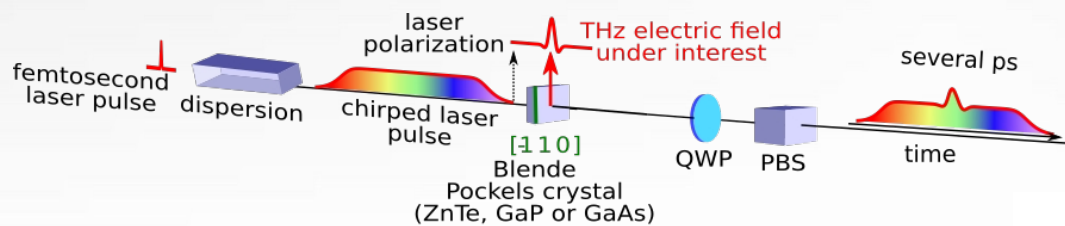
June 29, 2022

THz measurements

Electro-optic sampling



Single-shot measurements



THz measurements

Electro-optic sampling

+ Photonic time-stretch

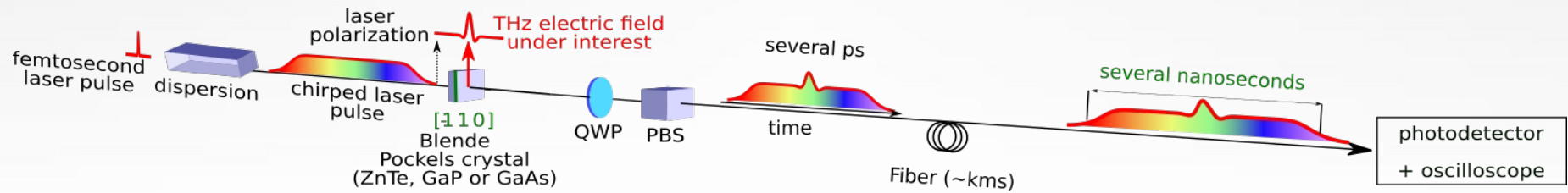
(in 2015)



Single-shot measurements



High acquisition rates



THz measurements

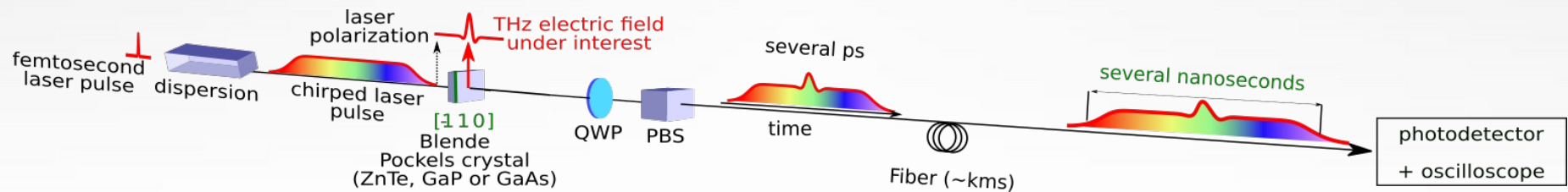
Electro-optic sampling

+ Photonic time-stretch

(in 2015)

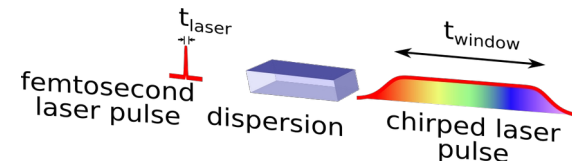
Single-shot measurements

High acquisition rates

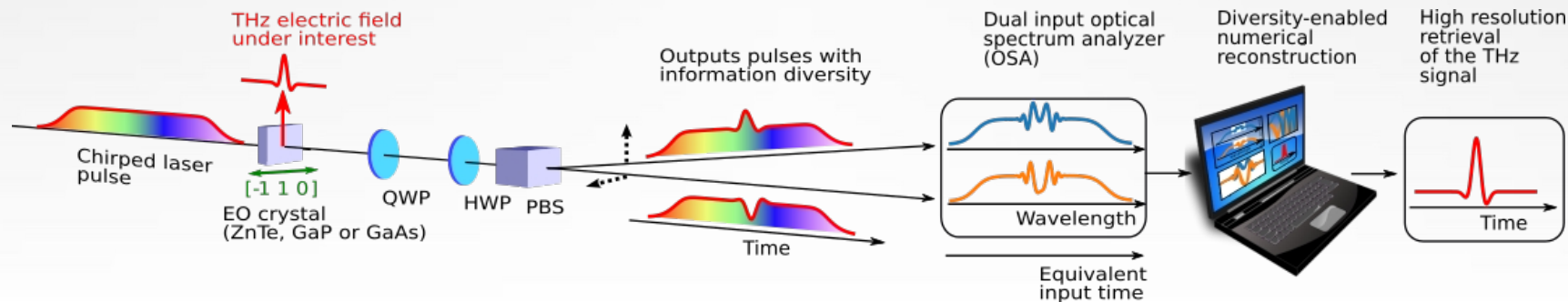


Low temporal resolution

Time resolution defined by : $t_{resolution} \approx \sqrt{t_{window} \times t_{laser}}$



Phase diversity electro-optic sampling : for a better temporal resolution (in 2020)



→ Sufficient ps/sub-ps resolution

Electro-optic sampling + Photonic time-stretch + Phase diversity (current work)

- ✓ **Single-shot measurements**
- ✓ **High repetition rates**
- ✓ **Sufficient ps/sub-ps temporal resolution**

→ For more details, see poster:

“ Single-shot time-stretch electro-optic sampling at the ELBE coherent THz CDR source”

