

Next Steps: Detectors

(The post-pyro era)

DESY: prefer room-temperature detectors

Suggestion: use stand-alone pulsed tube, or Stirling cooler system for HTSC

KIT: detector experts in house

Narrow-band Schottky detectors

Narrow-band filters

PSI: Schottky diodes have been successfully used as compression monitors at the SwissFEL Injector Test Facility

Future: research on MCT (mercury cadmium telluride), and other III-V semiconductor detectors (for BC2 @ SwissFEL)

Possible collaborations:

customize detector for beam diagnostics applications

calibration of detectors

Tofu filters

Data acquisition and analysis, feedbacks

KIT: data acquired to study bursting behavior

Post-processing in hardware

Control instability, optimize operation point of the ring

DESY: use data acquired at MHz rate for intra-bunch train feedback

Dresden: use part of the THz beam for diagnostics; give results to the users

PSI: measure diagnostics response

Possible collaborations:

Share FPGA code

Share DMA adapter for μ TCA crates

Tool to allow physicists to program FPGAs ;-)

> Session in 4th Mini-Workshop on Longitudinal Diagnostics

Electro-Optical Measurements

Reliability: limited by femtosecond laser systems

Timing system also based on fs lasers. Should be reliable enough for other applications

Experience @ KIT: reliability is not a problem.

Limited by non-linearities in the signal

- Use streak camera for absolute measurements

- EO has better resolution, and can be used to look for sub-structure

Possible to use 1550 nm wavelength? This would allow using timing system lasers

Erik will ask asian people whether they can make crystals suitable for this wavelength

Possible collaboration:

EO @ 1550 nm