

Optical lasers @ FLASH II

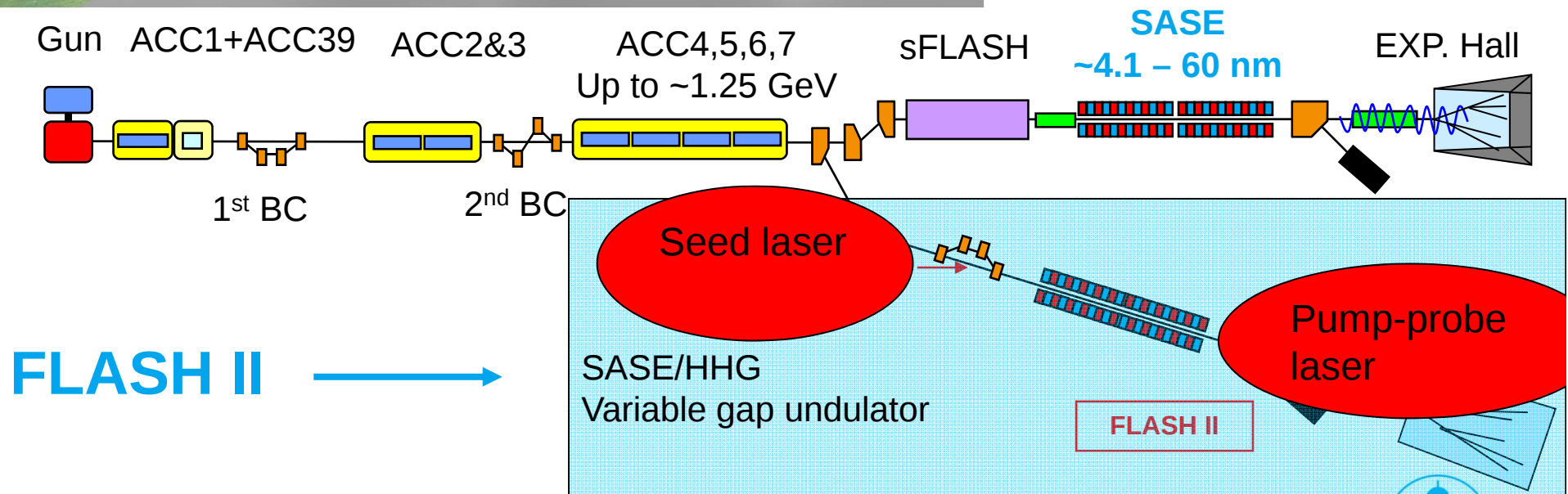
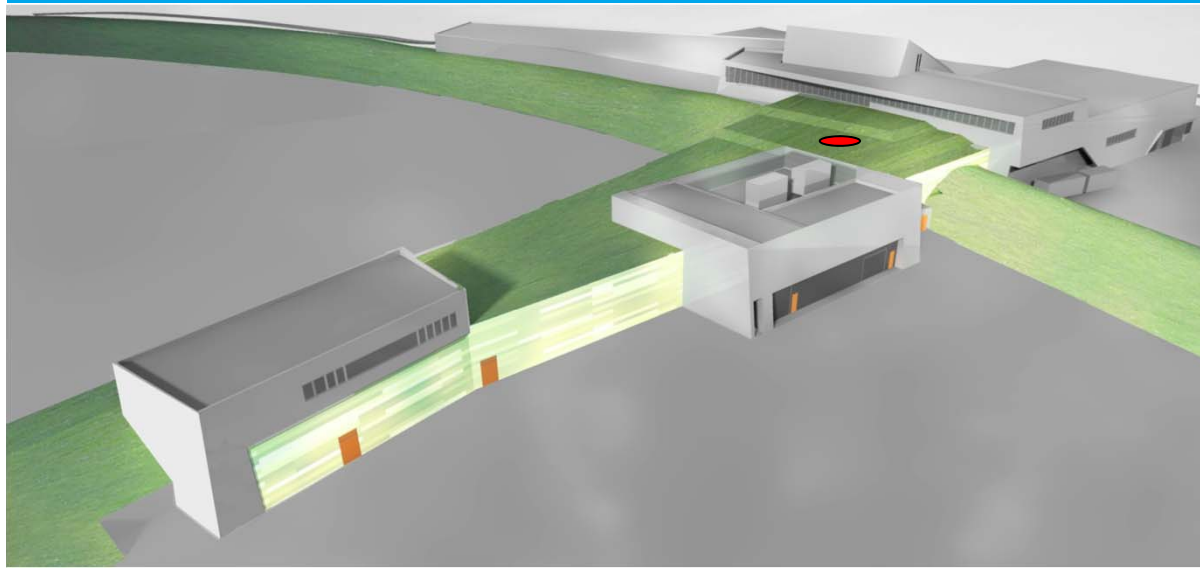
The pump-probe laser system at FLASH II



Stefan Düsterer

New Science opportunities at FLASH
Hamburg, October 12, 2011

Optical lasers @ FLASH III

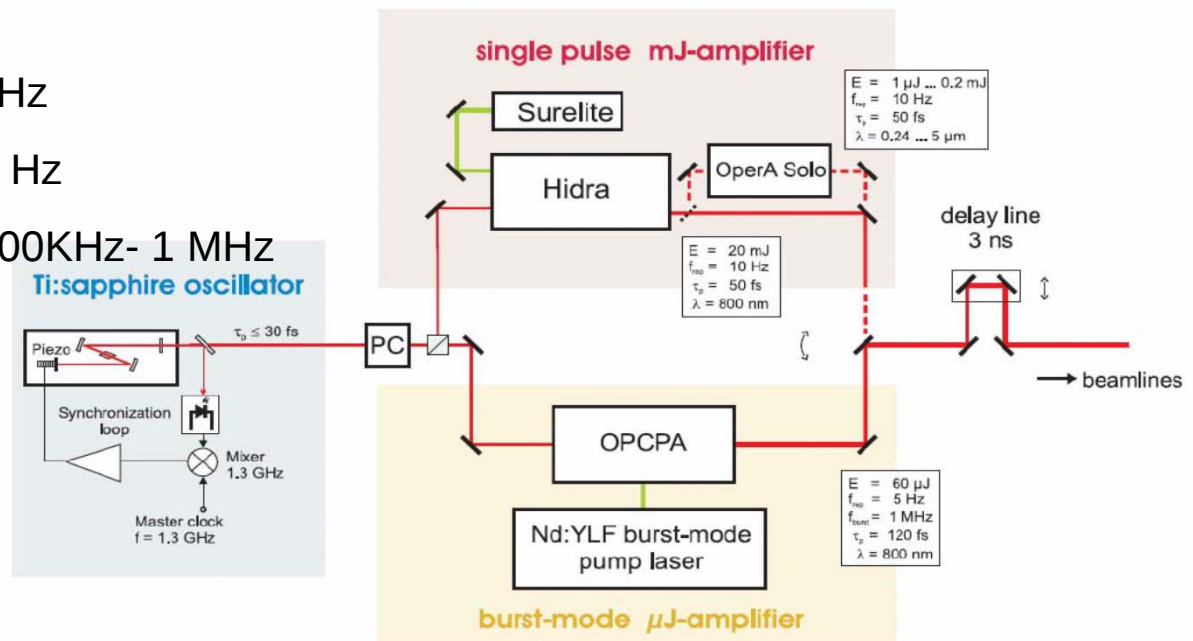


Laser at FLASH I

> ~ 40 % of shifts FEL in combination with optical laser !

> So far requested:

- ~10% 15 mJ, 10 Hz
- ~ 60% 1-2 mJ, 10 Hz
- ~ 30 % <0.1 mJ, 100KHz- 1 MHz



Laser parameters FLASH II

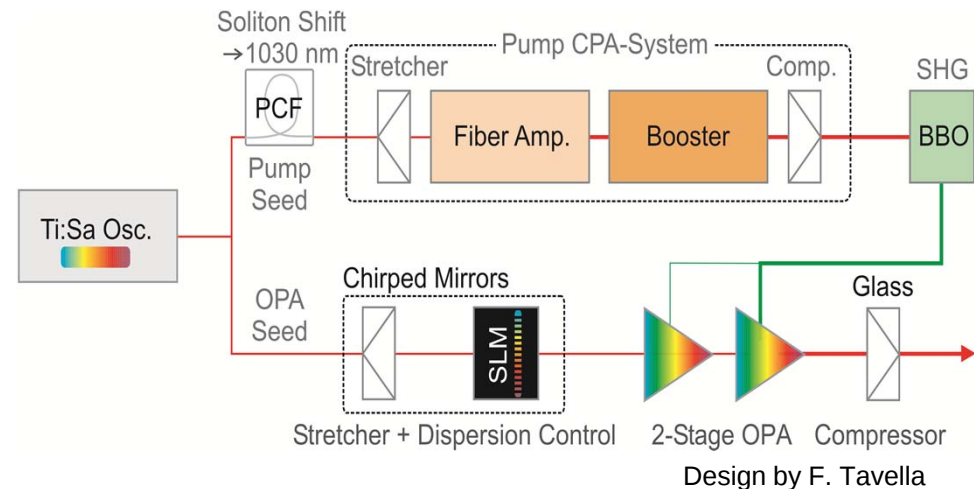
One OPCPA system !

Burst mode

- > 1 MHz: 0.1-0.2 mJ, < 20 fs
- > 100 kHz: 1-2 mJ, < 20 fs

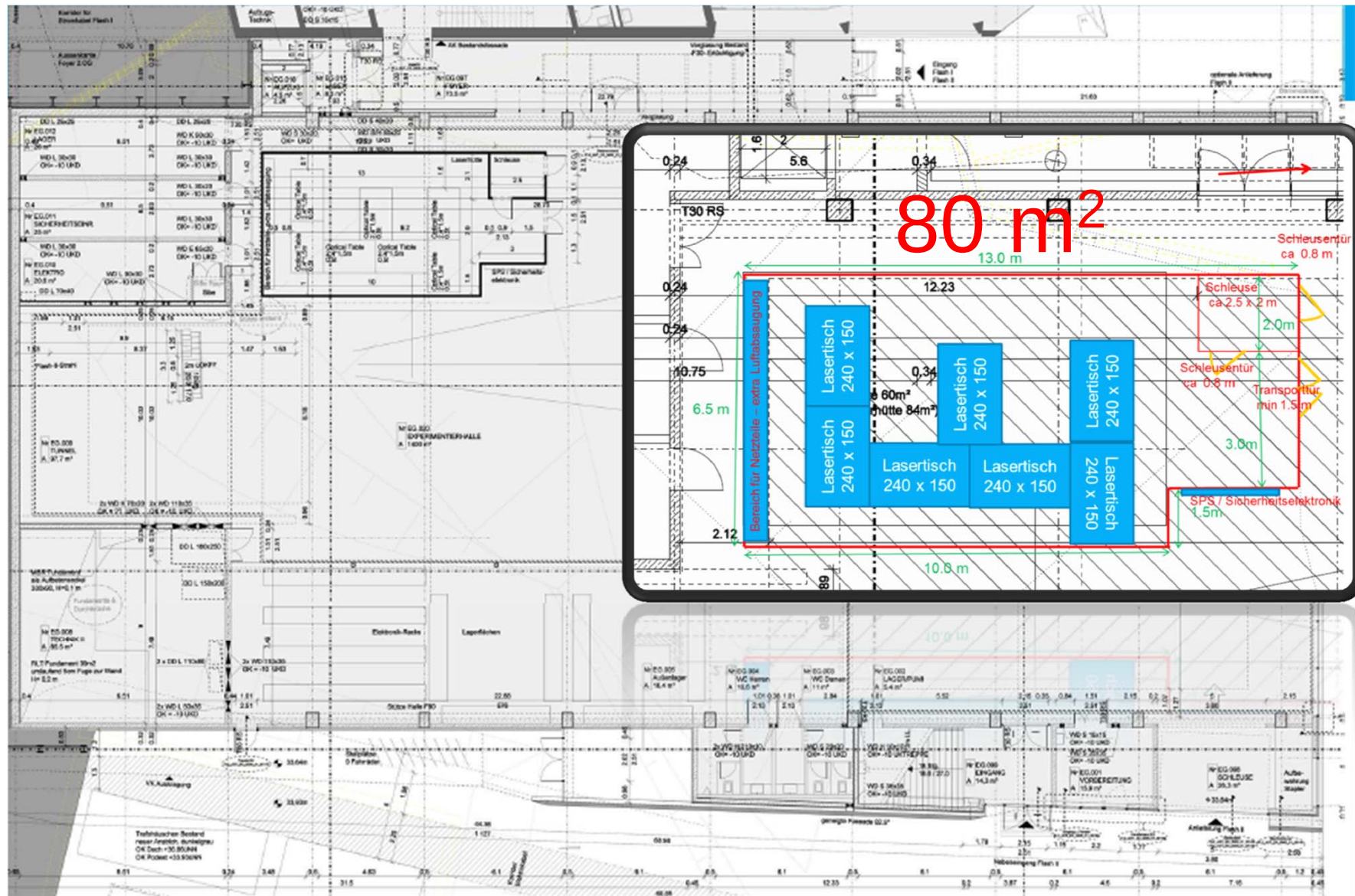
Single pulse

- > 10 Hz: ~10 mJ, < 20 fs



- > OPCPA is tunable: 650 nm – 1100 nm (+ SHG / THG ...)
- > „Pump laser“ : < 1ps, 1μm, 20-30 mJ @100 kHz / ~100 mJ @10 Hz

Laser hutch



Infrastructure

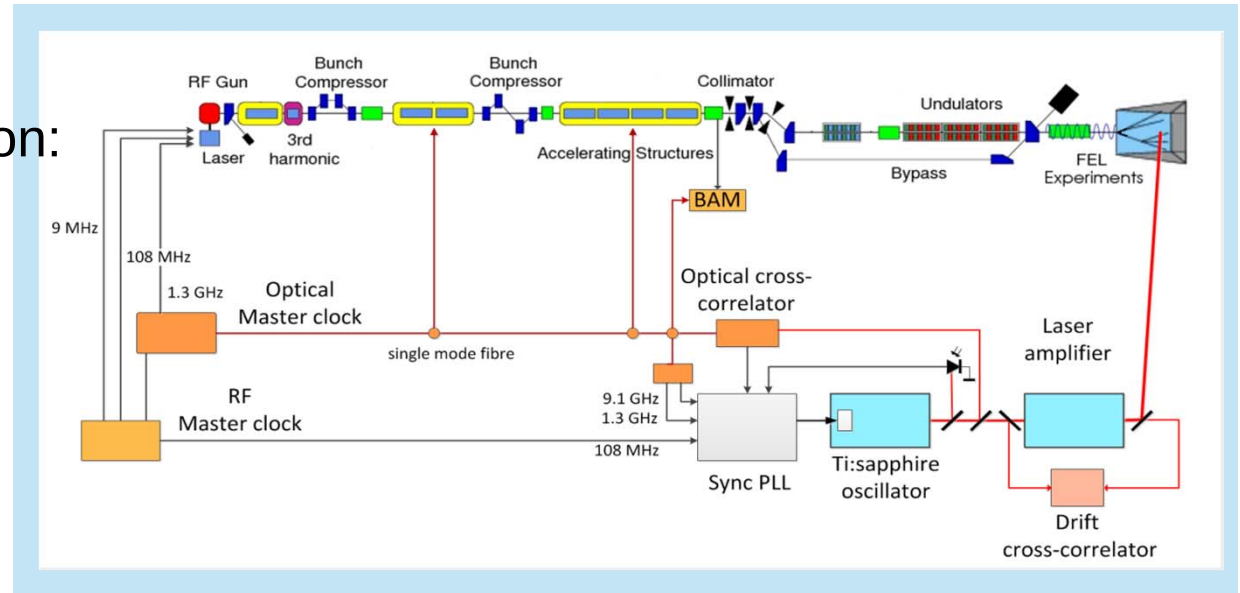
- > Beam lines for broad bandwidth / ultrashort pulses
- > Similar distribution planed as used at FLASH I
- > Delaylines, Polarization rotation, energy monitors ...
- > Encapsulated setup or mobile laser room (more flexible design ...)
- > New ideas ?
- > Fixed laser setup for end stations ?



Synchronization

> Synchronization relies on:

- optical master oscillator
- BAM
- optical cross correlation
- drift corrections



- no streak camera or TEO is foreseen
- Focus on stabilization rather than post mortem analysis

> We need input from you

> Please talk to us ...

e.g. at the poster session ...



Thanks.

See you at the poster (FEL 10)

