



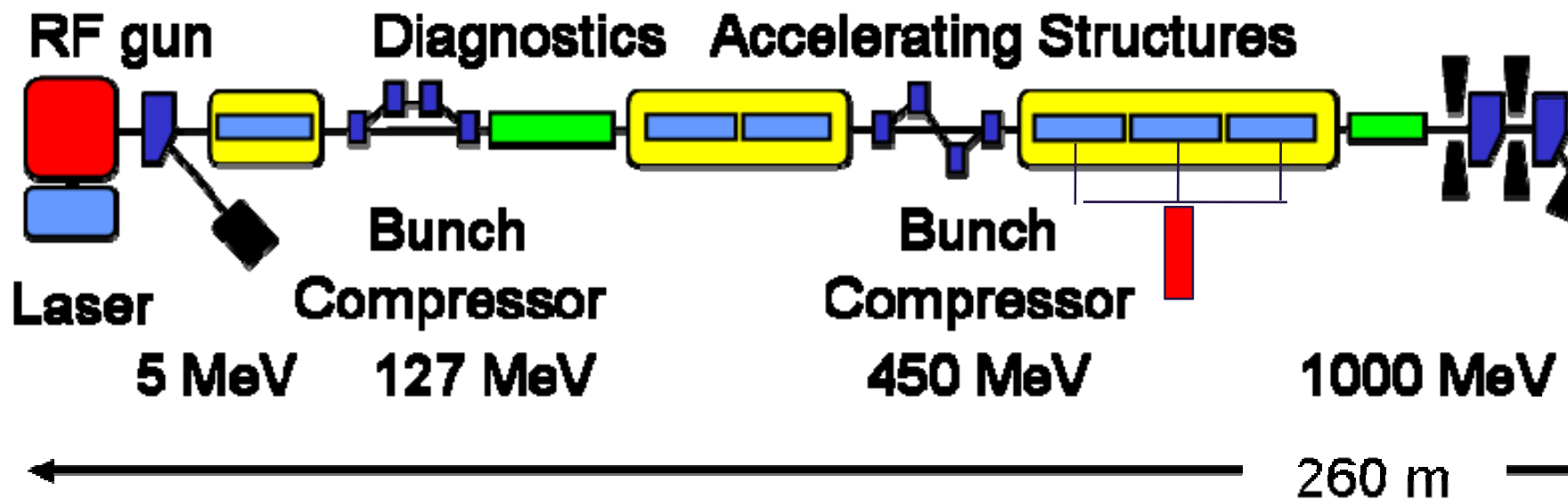
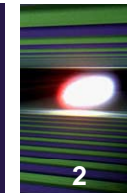
XFEL Context of the FLASH 9 mA Program



The need for operational experience

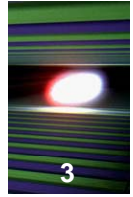
Hans Weise / DESY



XFEL vs. FLASH experiment



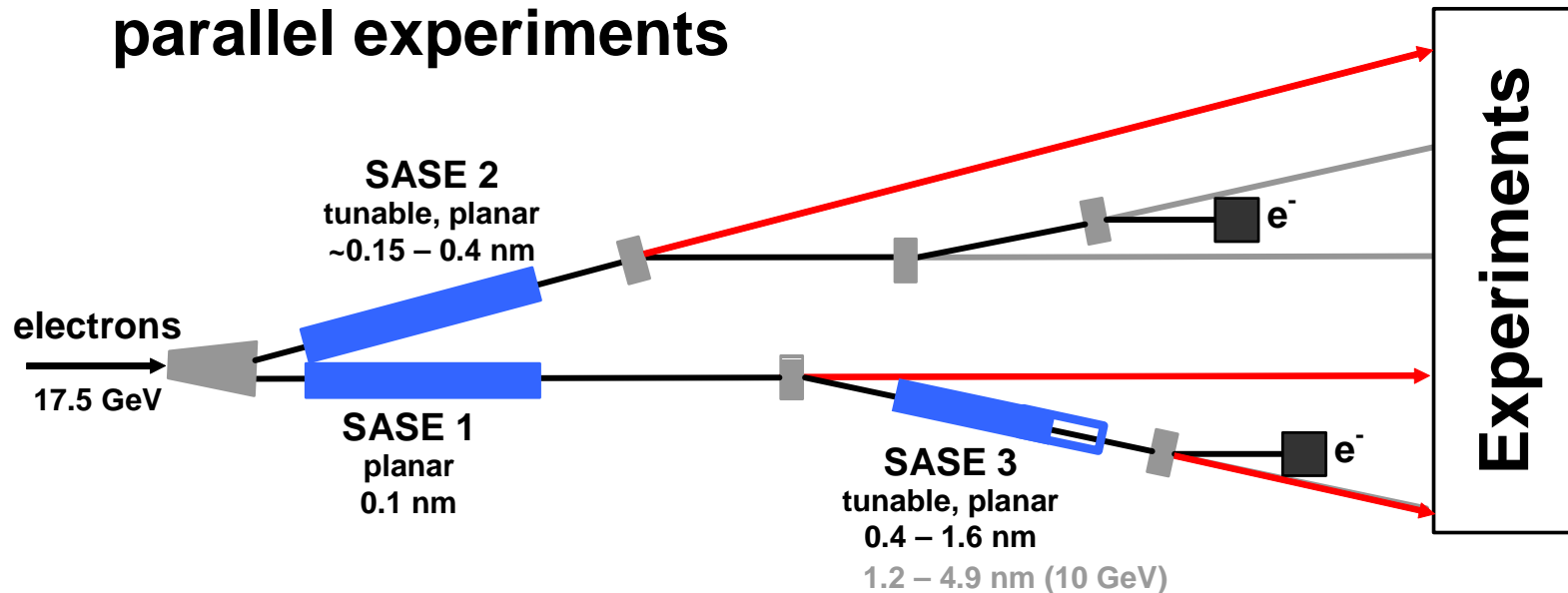
| | |  |  | FLASH design | FLASH experiment |
|--------------|---------|---|--|--------------|------------------|
| Bunch charge | nC | 1 | 3.2 | 1 | 3 |
| # bunches | | 3250* | 2625 | 7200* | 2400 |
| Pulse length | μ s | 650 | 970 | 800 | 800 |
| Current | mA | 5 | 9 | 9 | 9 |



- The available beam time is still approx. 50% for user experiments and 50% for studies (FEL & accelerator). **Users require mostly 1 to 30 bunches**, i.e. photon pulses, although a number of users could take 100 bunches; but **at bunch train lengths of more than 30 bunches, fluctuations** are slightly disturbing. The shift-by-shift wavelength change with long bunch trains is still demanding; **long train operation requires more tuning time due to the varying beam loading in the accelerator.**



- The future XFEL users are expecting
 - highest availability (typ. >90%)
 - permanent beam at several beam lines
- ➔ **Stable long bunch train operation in order to establish stable photon beam delivery at several parallel experiments**



Systems to be improved





5

- During the FLASH 9 mA experiment the improvement of several systems can be verified

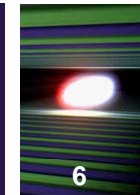
10:30->12:30 Technical System reports

Description:

Reports on each technical system readiness for a full 9mA demonstration, prior work needed, issues and concerns.

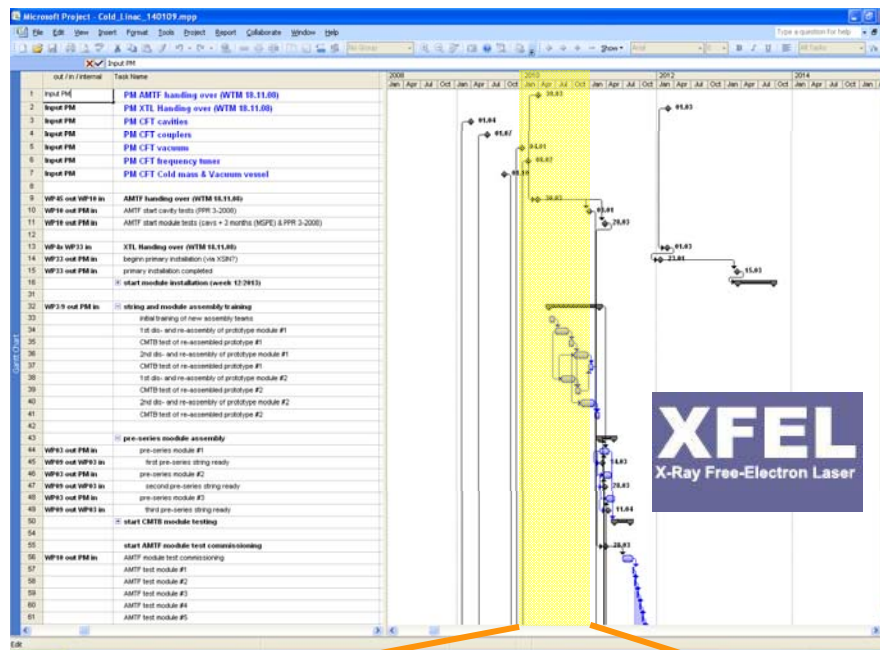
| | |
|-------|--|
| 10:30 | Diagnostics (15') |
| 10:45 | Machine Protection (MPS, BIS) (15')  Slides ) |
| 11:00 | Beam dump line (15')  Slides ) |
| 11:15 | Accelerator/beam transport (10') |
| 11:25 | High Level RF (10') |
| 11:35 | Cavities, modules (10')  Slides ) |
| 11:45 | Low Level RF Technical Systems (15') |
| 12:00 | Controls, DAQ (15') |
| 12:15 | RF Gun, Laser (15') |

Let's put it to the acid test, "die Nagelprobe"



FLASH
Schedule 2009 with dumpline repair at the end of the user period
favorite option, BAC 16-Dec-2008

| | week | date | n | schedule | goal | ren |
|-----------|-----------------|-----------------|---------------------------|----------------------|--------------------------|--------|
| | 52 | 22 Dec - 28 Dec | 5 | Maintenance | | |
| January | 1 | 29 Dec - 4 Jan | 5 | | | |
| 2009 | 2 | 5 Jan - 11 Jan | 4 | Accelerator studies | | |
| 3 | 12 Jan - 18 Jan | 4 | | | | |
| 4 | 19 Jan - 25 Jan | 2 | FEL studies | | | |
| 5 | 26 Jan - 1 Feb | 2 | | | | |
| February | 6 | 2 Feb - 8 Feb | 3 | | preparation user run | |
| 7 | 9 Feb - 15 Feb | 1 | User Run | | | |
| 8 | 16 Feb - 22 Feb | 1 | | | | |
| 9 | 23 Feb - 1 Mar | 1 | | | | |
| March | 10 | 2 Mar - 8 Mar | 2 | | | |
| 11 | 9 Mar - 15 Mar | 2 | FEL studies | | | |
| 12 | 16 Mar - 22 Mar | 2 | | | | |
| 13 | 23 Mar - 29 Mar | 3 | | preparation user run | | |
| April | 14 | 30 Mar - 5 Apr | 1 | User Run | | |
| 15 | 6 Apr - 12 Apr | 1 | | | | |
| 16 | 13 Apr - 19 Apr | 1 | | | | |
| 17 | 20 Apr - 26 Apr | 1 | | | | |
| May | 18 | 27 Apr - 3 May | 2 | FEL studies | test personnel interlock | te |
| 19 | 4 May - 10 May | 3 | | preparation user run | | |
| 20 | 11 May - 17 May | 1 | User Run | | | |
| 21 | 18 May - 24 May | 1 | | | | |
| 22 | 25 May - 31 May | 1 | | | | |
| June | 23 | 1 Jun - 7 Jun | 1 | | | |
| 24 | 8 Jun - 14 Jun | 2 | FEL studies | | | |
| 25 | 15 Jun - 21 Jun | 3 | | preparation user run | | |
| 26 | 22 Jun - 28 Jun | 1 | User Run | | | |
| July | 27 | 29 Jun - 5 Jul | 1 | | | |
| 28 | 6 Jul - 12 Jul | 1 | | | | |
| 29 | 13 Jul - 19 Jul | 2 | FEL studies | | | |
| 30 | 20 Jul - 26 Jul | 3 | | preparation user run | | |
| August | 31 | 27 Jul - 2 Aug | 1 | User Run | | |
| 32 | 3 Aug - 9 Aug | 1 | | repair dumpline | | |
| 33 | 10 Aug - 16 Aug | 1 | | | | |
| 34 | 17 Aug - 23 Aug | 5 | Maintenance | | | |
| September | 35 | 24 Aug - 30 Aug | 5 | | | FEL LI |
| 36 | 31 Aug - 6 Sep | 5 | | preparation shutdown | | |
| 37 | 7 Sep - 13 Sep | 4 | Accelerator studies | 9 mA | | |
| 38 | 14 Sep - 20 Sep | 4 | | | | |
| 39 | 21 Sep - 27 Sep | 6 | Shutdown for Upgrade Work | Installations: | | |



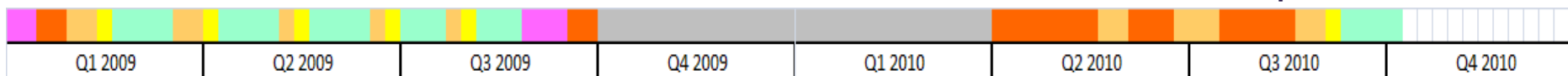
2010

9 mA exp.

ACC1 / ACC7 / ACC39

3.9 GHz beam studies

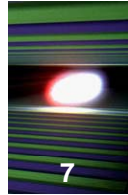
9 mA exp.



XFEL system specification

XFEL system / component production





TTF/FLASH 9mA Mini-Workshop (16 January 2009) - Windows Internet Explorer

http://ilcagenda.linearcollider.org/conferenceDisplay.py?confid=3234

category | view: ILC style | focus on: -- all sessions -- | details: contribution | manage | Apply for participation | LOCAL: Europe/Berlin | login

ilc "TTF/FLASH 9mA Mini-Workshop"
chaired by Nicholas Walker (DESY), John Carwardine (Argonne)

Friday 16 January 2009
from 09:00 to 20:00
at DESY (30b/459)

Friday 16 January 2009 | [top](#)

Friday 16 January 2009

09:00->10:15 Introduction, goals, context
Description:

| | | |
|-------|---|---------------------------|
| 09:00 | Introduction, 9mA program goals, schedule, constraints (30) | Nicholas Walker (DESY) |
| 09:30 | XFEL context of the 9mA program (20) | Hans Weise (DESY) |
| 09:50 | Results and accomplishments to date (30) | John Carwardine (Argonne) |
| 10:15 | Coffee (15) | |

10:30->12:30 Technical System reports
Description:
Reports on each technical system readiness for a full 9mA demonstration, prior work needed, issues and concerns.

| | | |
|-------|-------------------------------------|---|
| 10:30 | Diagnostics (15) | Kay Wittenburg (DESY) |
| 10:45 | Machine Protection (MPS, BIS) (15) | Lars Frfoelich (DESY), Martin Staack (DESY) |
| 11:00 | Beam dump line (15) | Michael Schmitz (DESY) |
| 11:15 | Accelerator/beam transport (10) | |
| 11:25 | High Level RF (10) | Stefan Choroba (DESY) |
| 11:35 | Cavities, modules (10) | Denis Kostin (DESY) |
| 11:45 | Low Level RF Technical Systems (15) | Mariusz Grecki (DESY) |

Thank you!!!