

Meeting of the XPCS working group at the MID workshop Oct 28/29 in Grenoble

23 participants

3 presentations

B. Sepiol: Atomic diffusion by XPCS

A. Madsen: Considerations for XPCS at the XFEL

H. Sinn: XPCS from water

Discussion about MID-station related issues

Source parameters

- Photon energy
 - minimum energy changeable on a week to week time scale (down to 6 keV)
 - use harmonics and larger gaps up to 36 keV
- Pulse pattern
 - considered sub 200 ns bunch spacing via delay generation in the gun
 - interest in 20 to 30 Hz Operation
- Pulse length
 - interest in sub 100 fs pulses (beam damage)
 - presently no interest in < 1 fs,
 - some interest in longer pulses
- Polarization
 - vertical (use afterburner, waveplate)

Beamline

- Monochromaticity
 - $\Delta E/E = 10^{-3}, 10^{-4}, 10^{-5}$ (matches by split and delay line)
- Spot size
 - focused, variable from 25 μm down to 1 μm diameter
 - unfocused with slits
- Diagnostics
 - beam intensity pulse-to pulse
 - beam position “
 - pulse length “
 - higher harmonics “
 - speckle visibility non destructive, pulse-to pulse

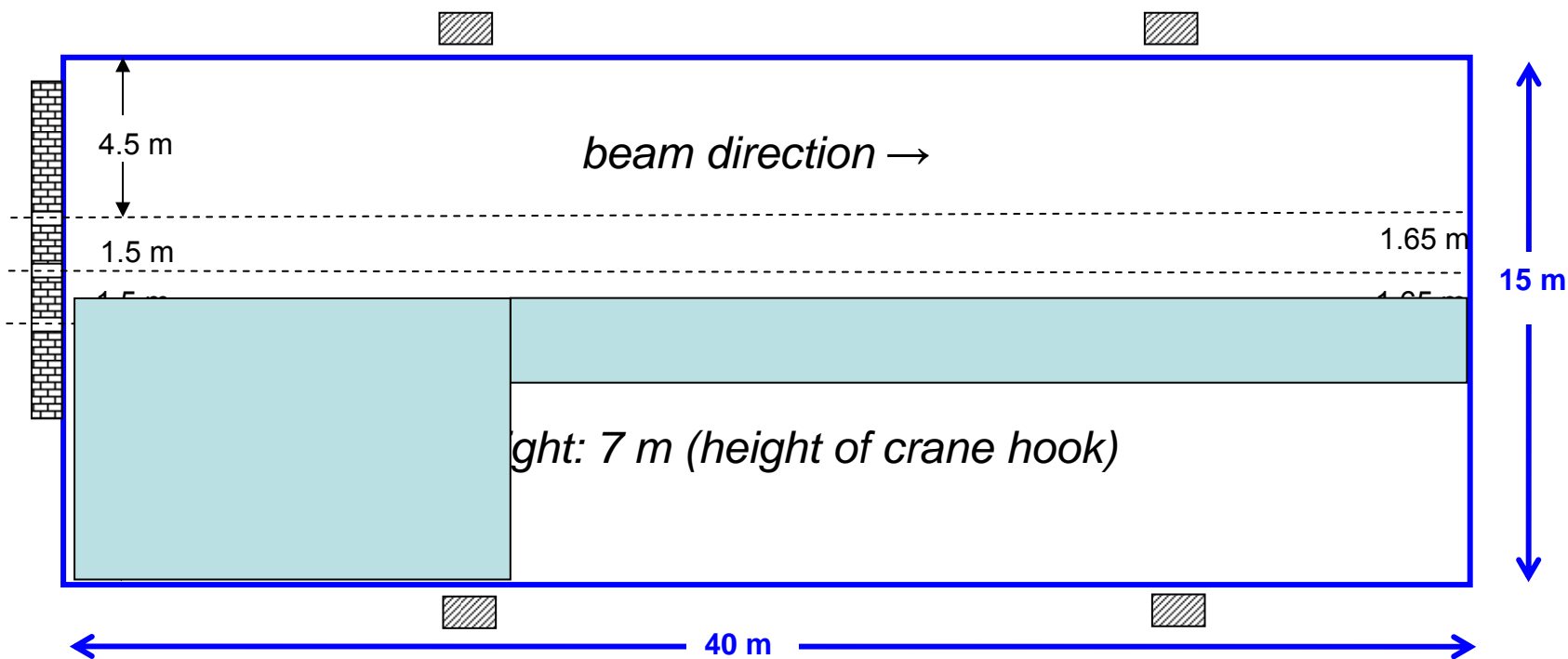
Detectors

- Three types of experiments considered
 - WAXS up to 60°
 - SAXS $\pm 0.6^\circ$
- WAXS dynamics
 - low count rate experiments
 - 4 μrad angular resolution
 - needs sufficient (10 m) transverse floor space
 - limited dynamic range
 - as many frames as possible
 - 10^8 pixels
- single-shot large q experiments
 - higher count rates – higher dynamic range
 - focusing \rightarrow 40 μrad angular resolution
 - more limited no. of frames (some experiments may use the full frame rate)

Detectors

- SAXS
 - 4 μ rad angular resolution
 - long hutch in forward direction
 - high dynamic range
 - as many frames as possible
- input from detector group needed
 - tradeoffs between pixel size, storage, dynamic range
- masking option needs to be studied

SASE 1: floor plan experimental stations



March 27, 2008

Sample environment

- variable energy split and delay
- liquid jet
- diffractometer
- cooling/heating
- external fields
 - B, pressure
- pump laser
- THz
- interest in special samples (active/toxic)