Status of MXCuBE Beamline Control at BESSY II

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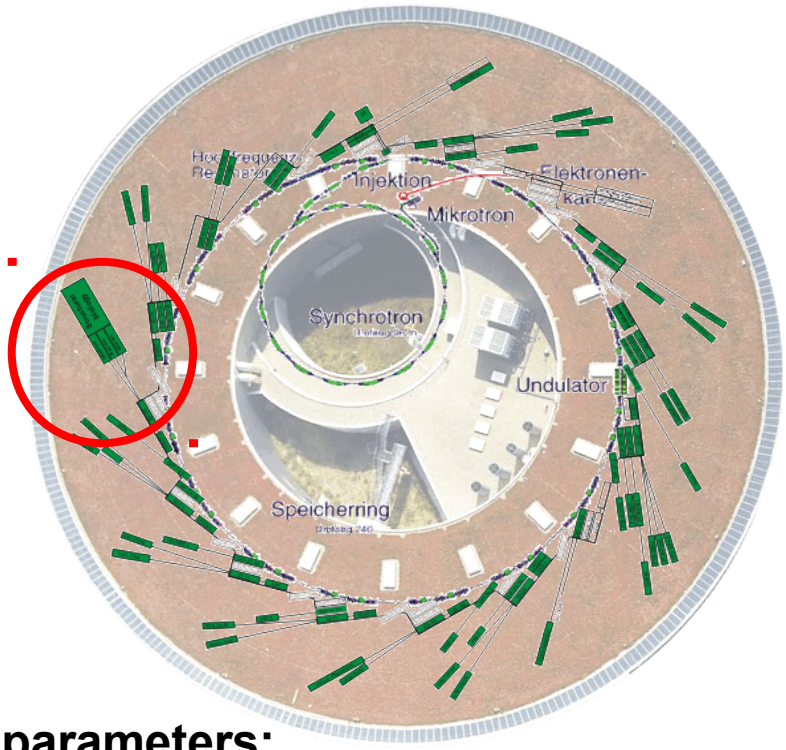
on behalf of the HZB-MX group

Joint ISPyB-MXCuBE Meeting, 30.01.-02.02.2018,
Diamond Light Source

BESSY II synchrotron characteristics



Ring parameters:

Energy:	1.7 GeV
Current:	**250 mA**
Emittance:	5 nm·rad
Circumference:	240 m
Straight sections:	16
$E_{crit:}$	2.5 keV

3rd generation facility in the XUV energy range

HZB-MX insertion device: WLS7T wavelength shifter

B MX-WLS.: 7 T

E_{crit} (MX-WLS): 13.45 keV

[Budker Institue of Nuclear Physics, Novosibirsk 2000]

MX experimental floor at BESSY II

BL 14.1 MAD

- MD2 with MK3
- Pilatus2 6M 12 Hz
- CATS: 90 SPINE samples

- MXCuBE 2.2 Qt4

- standard user operation schedule:
  24/5 (Tuesday to Saturday)

BL 14.3

- Marresearch DTB
- Rayonix Mar225
- HC1 humidifier

- *marccd* experiment control

BL 14.2 MAD

- Nanodiff goniometer
- Pilatus3 2M
- GROB: 294 SPINE & Unipuck samples

- MXCuBE 2.2 Qt4

MX beamline 14.3

- Main purpose:
  - crystal optimization
  - high-resolution data collection for small-molecule crystallography

- Scope of the upgrade:
  - experimental alignment table
  - goniometer: **Arinax MD2S**
  - sample environment for humidity-controlled experiments: **Arinax HClab & REX**
  - integration of existing 2D detector with support for future HPC detector upgrade
  - optional integration of sample changer
  - **MXCuBE2 experiment control**

- Schedule
  - finalization of design process
  - hardware installation in summer 2018
  - start of operation early 2019

Beam parameters:
- Fixed energy: 13.8 keV
- Photon flux: 5.5 x 10^{10} Ph./s

MXCuBE: status and future plans

- current status:
  - MXCuBE 2.2 Qt4 running on both tunable beamlines BL14.1 and BL14.2
  - ongoing migration works towards use of abstract classes:
    GenericDiffractometer
    AbstractCollect

- short- and mid-term plans:
  - switch to GitHub master branches for MXCuBE2 and HardwareRepository
  - integration of PlateManipulator as pseudo sample changer
  - prepare MXCuBE2-based experiment control setup for upgraded BL14.3
  - evaluate Python3 and Qt5 compatibility to comply with current standard Linux installations

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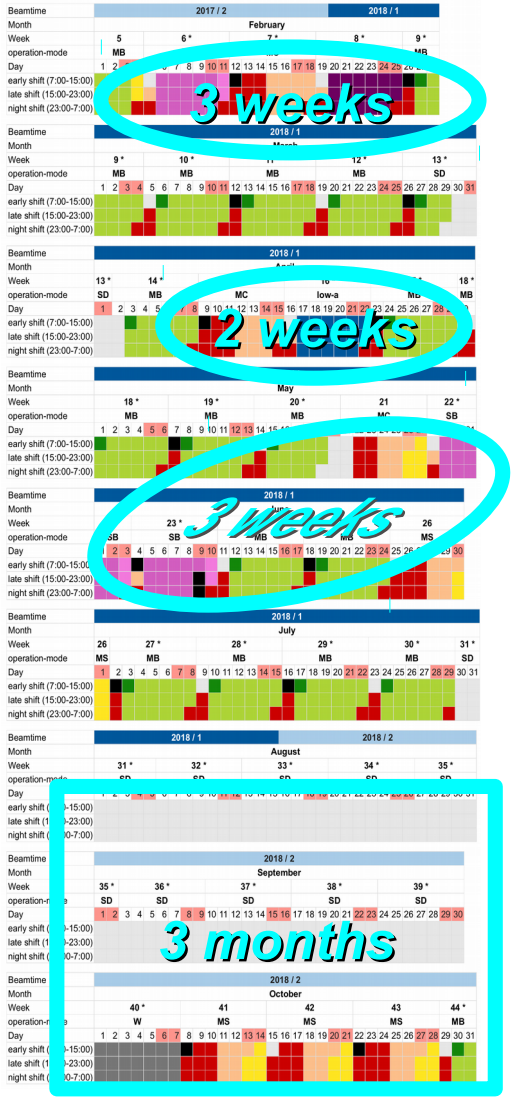

Acknowledgements

BESSY-MX team

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The MXCuBE collaboration

Industrial partners:

Thank you for your attention.

Questions?