

Serial and Macromolecular Crystallography at beamline P11, Petra III

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P11 at PETRA III in Hamburg is a versatile beamline for macromolecular crystallography (1). The photon energy can be adjusted between 5.5 - 28 keV with the possibility of using a CdTe-detector for higher energies (> 22 keV). Beam sizes are available between 200 x 200 µm and 4 x 9 µm with a maximum photon flux of 1e13 ph/s at 12 keV.

P11 is optimized for high-throughput crystallography. EIGER2 X 16M detector is fully integrated since spring 2021 and sample cycle of less than 2 min can be reached. The automatic sample changer at P11 is based on the unipuck format with a total capacity of 23 pucks (368 samples) and a mounting cycle of 20 s.

Remote access was established in spring 2020 and enabled fast-track access for SARS-CoV2 related projects (e.g. 1-4) and since May 2020, almost normal user operation, despite the pandemic restrictions.

The P11 setup in the experimental hutch is very flexible and allows to accommodate various non-standard experiments *e.g.* via the long term proposal (LTP) scheme. Serial crystallography at P11 is enabled with sample delivery through various types of solid supports or the tape-drive setup, which also enables time-resolved experiments by the mix-and diffuse method (5). Serial data collections are implemented as fast 2D scans or as series of rotation wedges in the graphical user interface; full integration of tapedrive experiments is in progress. OnDA (6) is available for real time evaluation of SSX data and implementation of real-time SSX processing is in progress within an LTP.

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