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Beamline P10 'Coherence Applications' at PETRA III

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The Coherence Applications Beamline P10 at PETRA III is dedicated to coherent X-ray scattering experiments using X-ray Photon Correlation Spectroscopy (XPCS) and Coherent Diffraction Imaging (CDI) techniques as well as time-resolved studies of complex liquids (Rheo-SAXS).
Mostly, the beamline operates in the energy range of 5-17 keV. It consists of two 12m long experimental hutches (EH1 & EH2) which house various experimental setups. Here, we want to focus on the ultra-small angle X-ray scattering (USAXS) setup at P10 –while the sample position is situated in the first experimental hutch (EH1), the detector is positioned at the end of the second hutch (EH2), which results in a sample to detector distance of around 21.3 m. This long pathway allows it to use a large fraction of the horizontal coherent flux in an unfocused X-ray beam, while providing a fairly strong speckle visibility at 8 keV using state-of-the-art hybrid pixel array detectors. The setup is therefore ideally suited for radiation sensitive samples such as most complex liquids, as the flux per sample area can be considerably reduced using a comparatively large X-ray beam.

Primary authors: WESTERMEIER, Fabian (DESY); DZHIGAEV, Dmitry (DESY); KAMPMANN, Matthias (DESY); STELLAMANNS, Eric (DESY); WESCHKE, Daniel (DESY); SPRUNG, Michael (DESY)

Presenter: WESTERMEIER, Fabian (DESY)

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