A WAVEGUIDE-BASED IMAGING SETUP FOR PETRA III

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Recent results in the field of X-ray waveguides have successfully demonstrated the imaging capability [1] and high resolution in object localization [2]. In combination with improved waveguide fabrication techniques [3] waveguide-based holographic microscopy can become a powerful tool for life sciences and nano sciences. An important advantage of holographic imaging compared to coherent X-ray diffractive imaging (CXDI) results from a deterministic and unique one-step object reconstruction. To fully exploit the potential of waveguide-based holographic imaging, we are designing and constructing a dedicated waveguide imaging endstation at the coherence beamline P10 of PETRA III.

We will present the requirements and current development status for the waveguide imaging setup, including prefocusing optics, positioning accuracy for waveguide and sample, detector resolution, overall stability and a tomography option.

References

[1] C. Fuhse, C. Ollinger and T. Salditt, *Physical Review Letters* **97**, 254801, (2006)
[2] C. Ollinger, C. Fuhse, S. Kalbfleisch, R. Tucoulou, and T. Salditt, *Appl. Phys. Lett.* **91**, 051110 (2007)
[3] A. Kohlstedt, S. Kalbfleisch, T. Salditt, M. Reiche, U. Gösele, E. Lima, and P. Willmott, *Applied Physics A* **91**, 6-12 (2008)

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