

Seminar über Ultrafast Science and Technology

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Titel: X-ray ptychography

X-ray ptychography is an amplitude and phase sensitive technique based on coherent diffractive imaging. From the nanostructures and network of bone to the porosity of stacked layers in solar cells, ptychography enables the characterization of samples with hierarchical structures in life and material science with nanoscale resolution. The sample is illuminated with a spatially confined beam at overlapping positions, which allows a large imaging field of view as well as the quantitative reconstruction of the spatial distributions of electron density and attenuation of the sample. Laser interferometry is used in the experiment to enhance the scanning precision, pushing the 3D resolution to sub-20nm. The method can also be extended to spectroscopy and magnetic imaging.

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