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SmartPhase: Start to End Holotomography

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The goal of SmartPhase is to simplify the reconstruction of near-field holograms (NFH) obtained at experimental endstations at synchrotron radiation facilities e.g. PETRA III at DESY, Hamburg. NFH is a phase-sensitive microscopy modality which allows to image small density variations in samples, also under in-situ and operando conditions.

These kind of experiments require continuous feedback to the experimentalist. We have developed an algorithmic framework which can robustly recover the phase and is able to perform an optimization of the propagation distance, i.e. bringing the reconstruction 'in focus', from a single measured hologram. We have been further working on an automatization of the whole reconstruction pipeline, so that users of the experiment can take their processed data to their home institution. We will report on our current state to achieve the different aspects of this project (online view, parameter optimization and reconstruction pipeline).

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