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## Reconstruction of diffractograms in X-ray imaging of biological objects using Bragg Magnifier

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We present the wave propagator determination and improved phase retrieval algorithm invented specifically for imaging of biological objects using Bragg Magnifier Microscope (BMM). The robustness of the algorithm is tested on different samples and the results are shown. First, it is applied to the experimentally measured diffractograms of well-defined samples of polystyrene spheres and siemens star. After achieving success with their analytical forms, we present the reconstruction of the more complex biological object - model organism Tardigrade, where we also deal with the phenomenon of phase wrapping. The obtained resolution of the reconstructed images is determined to be between 0.5 and 1  $\mu\text{m}$ . To speed up our numerical tool, we implemented it on GPU allowing us to reconstruct a single image in few minutes. Results confirm the potential of imaging of biological objects using BMM with the submicron resolution.

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