

User manual for holographical reconstruction

This user manual illustrates how to reconstruct holographic images from the experimentally measured raw data through MATLAB. In the file folder named “holographic reconstruction (MATLAB)”, the file named “singlepixel_dataprocessing_complex.m” is the main file for holographic reconstruction. After executing this main file using the converted MATLAB data named “biological_sample.mat” and “background_curvature.mat”, the output files including many intermediate variables are stored in the folder named “results”. Among them, the expected amplitude and phase images are named “imaging-amplitude.fig” and “imaging-phase.fig”, respectively.

A flowchart of the step-by-step procedures to reconstruct holographic images is shown below.

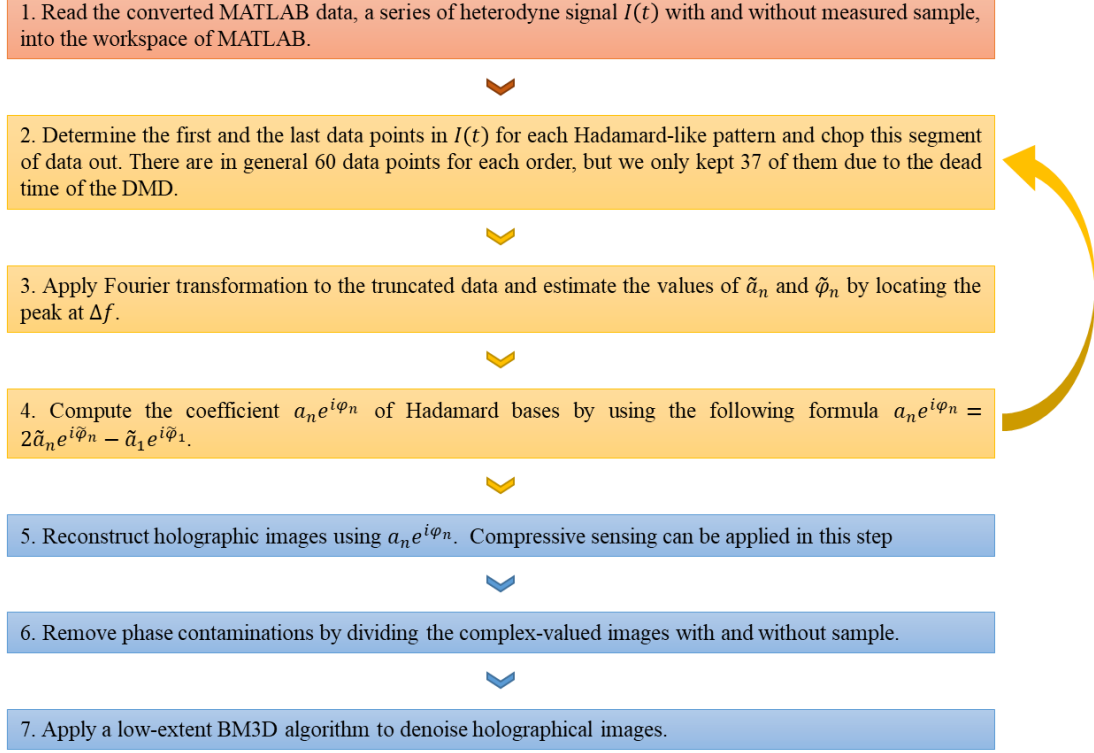


Fig. 1 A flowchart of the reconstruction process

For the example provided here, the finally reconstructed amplitude and phase images are also provided below:

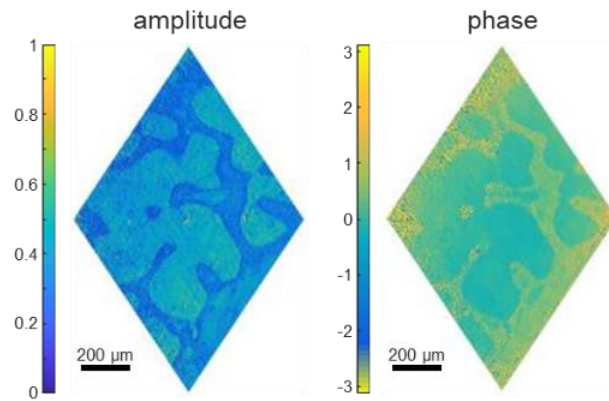


Fig. 2 Reconstructed holographic images of the given example