

Physics-based Iterative Projection Complex Neural Network for Phase Retrieval Supplementary Material

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1. More Visual Results

In the supplementary material, we provide more comparison results of our method with the state-of-the-arts on various types of cells, as shown in Fig. 1 and 2.

The phase result of the ground truth is not unwrapped. Therefore, the phase result that we retrieved does not need to be completely consistent with the ground truth. As long as the relative gray values between pixels are consistent, the recovery is considered to be successful. From this point, we do not provide objective evaluation results, such as PSNR that is widely used in natural image restoration, but just provide visual evaluation results.

It can be seen from the experimental results that our proposed algorithm achieves the best results. Although there is still a big gap with the truth map, the ground truth needs to be obtained by collecting $8 \times 5 \times 5$ volume data, in contrast our method just needs one shot for imaging.

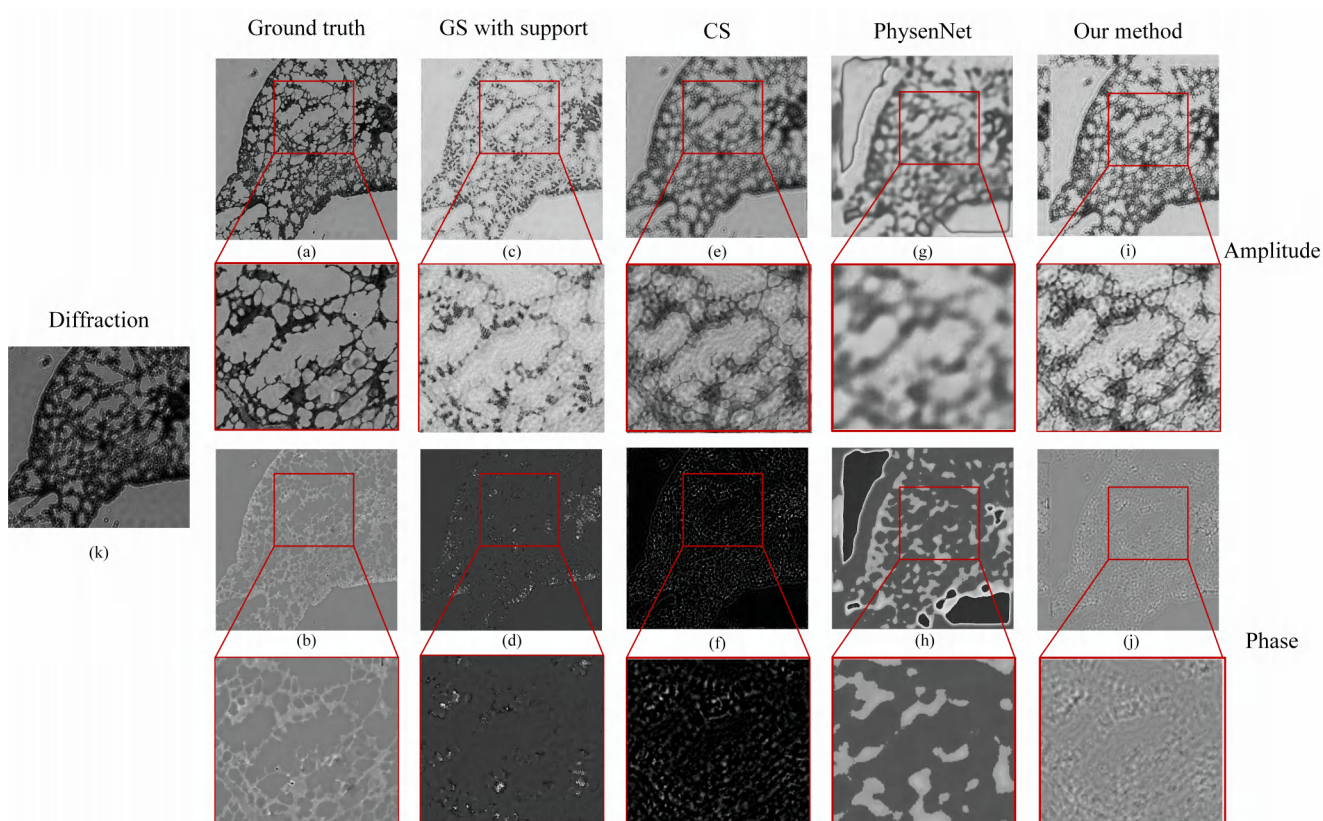


Figure 1. Visual comparisons on the H&E stained pathological slides of rat lung.

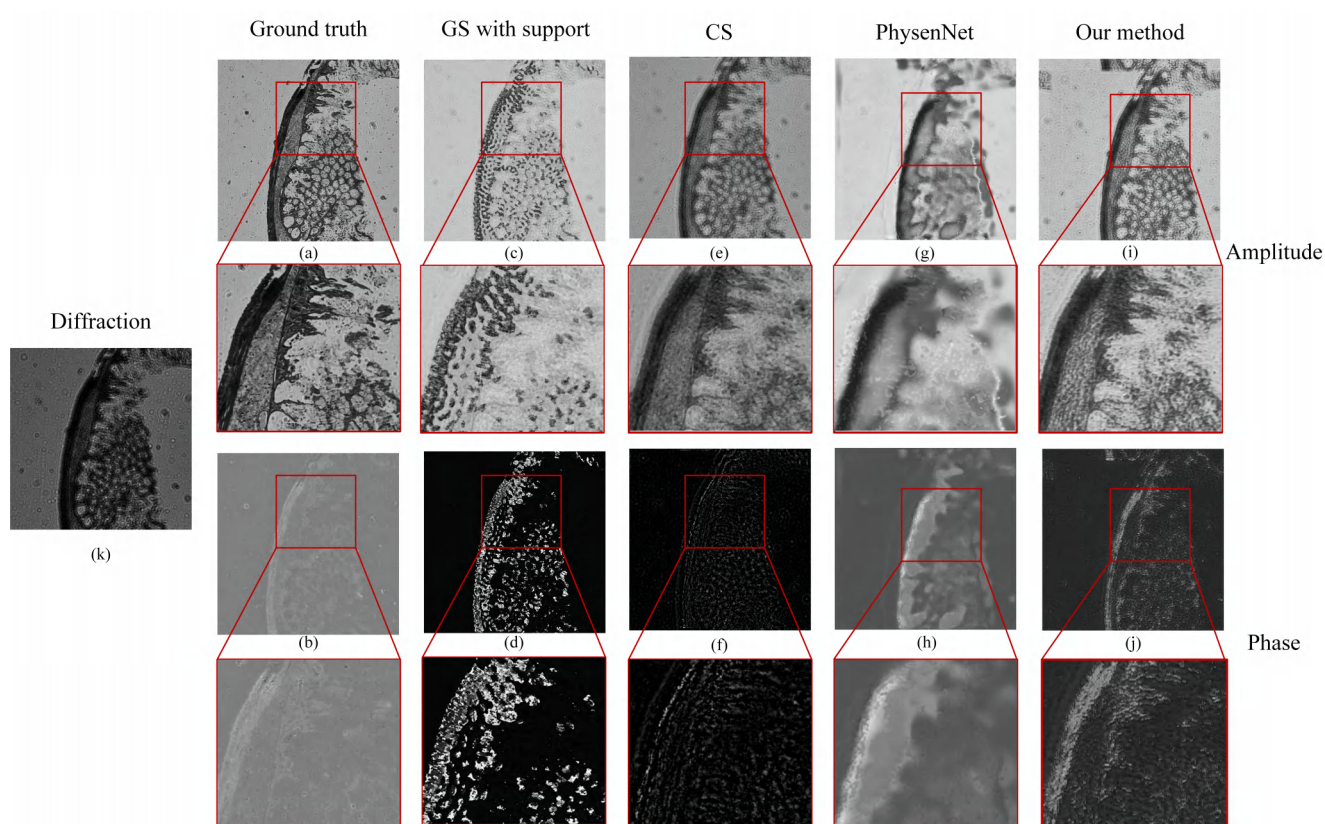


Figure 2. Visual comparisons on the H&E stained pathological slides of rat intestine.

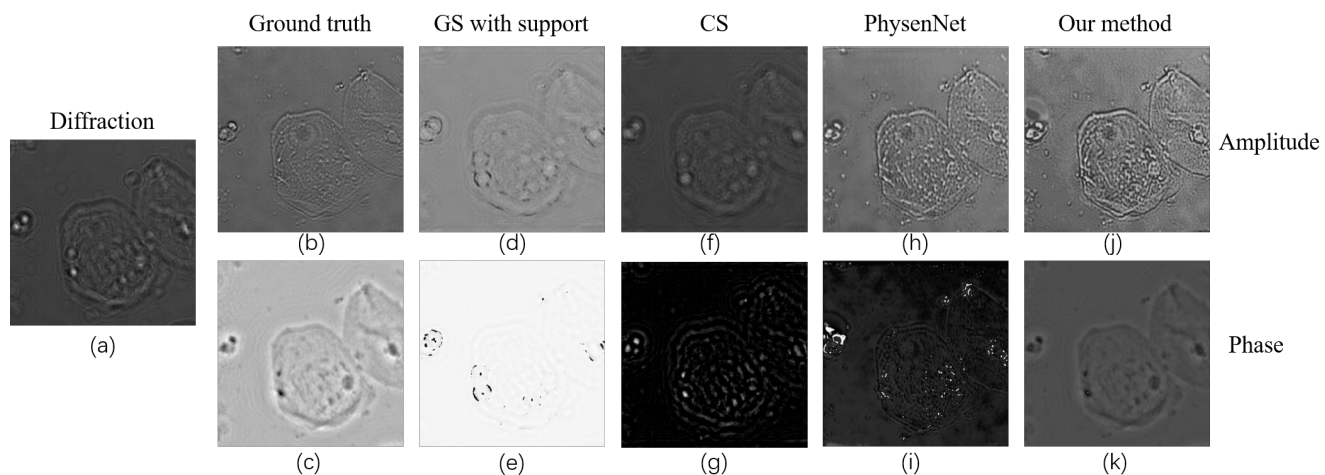


Figure 3. Performance comparison for wide-field microscopy. Please enlarge the PDF to see more details.

we also provide another PR application example—wide-field microscopy[1]. The experimental results is shown in Fig. 3

References

- [1] Z. Jingshan, R. A. Claus, J. Dauwels, L. Tian, and L. Waller. Transport of intensity phase imaging by intensity spectrum fitting of exponentially spaced defocus planes. *Optics Express*, 22(9):10661–10674, 2014. 2