

The simulation investigation shows that the retrieving precision of less than 8% could be achieved with only two images, as long as the optimized recording distances are used for both of the images. This implies that the method developed in this paper could find practical applications in many fields, such as biomedicine, material science, geology, paleontology etc., where relatively higher precision quantitative information is required. Compared to multiple images and single image phase retrieval, the two-image-based retrieval with optimized recording distances meet the very good compromise between dose and precision. Combined with microtomography, higher density resolution should be achievable.

Phase retrieval with three or more images is not investigated in this paper. However, we believe that there should be optimized recording distances for all the images if the best retrieval is required, though the optimizing process would be far more complicated.

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