

Ultra-broadband ptychography

Southern University of Science and Technology, Shenzhen, China

Fucai Zhang, Huixiang Lin

Email: zhangfc@sustech.edu.cn

X-ray ptychography has emerged as a powerful imaging tool on X-ray synchrotron facilities. The implementation of ptychography on laboratory-scale X-ray sources has largely been hindered by their poor temporal coherence and low flux. Several approaches have been proposed to address this poor coherence issue, including coherence mode decomposition and various diffraction pattern monochromatization methods. Recently, we have also proposed de-convolution based approaches to tackle this issue. Good results using a 60% bandwidth light source and a high harmonic extreme ultraviolet (EUV) source were obtained and precise quantitative phase imaging capabilities were demonstrated. We will present a detailed discussion of our approach and some compelling experiment results.

Short Bio:



Fucai Zhang received his Ph.D. in Electronic Information and Engineering from Gunma University, Japan. He is a tenured associate professor at the Southern University of Science and Technology (SUS Tech), Shenzhen, China. His research interests include developing novel computational methods for ultra-fast optical pulses characterization and for X-ray imaging using synchrotron facilities and electron microscopy.