

Serial coherent diffraction imaging based on interframe constraint

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Ptychography, a mainstream technique for imaging beamlines at synchrotron facilities worldwide, has faced limitations in its application for fast dynamics study due to its scanning nature. Despite some recent attempts at single-shot ptychography schemes, the improvements are mild. In this talk, we report a novel approach to diffraction imaging that leverages the similarity of successive diffraction pattern recordings. A new phasing algorithm has been developed, showing remarkable success in adaptively identifying the similar regions between each recording during iterations. This similarity serves as a robust constraint in the object space, leading to a rapid convergence of the algorithm and improved robustness to missing data and noise. We will present a detailed discussion of this innovative idea and some compelling visible light experiment results.

Short Bio:



Fucai Zhang received his Ph.D. degree in Electronic Information and Engineering from Gunma University, Japan. He is a tenure-tracked associate professor at the Southern University of Science and Technology (SUSTech), China. His research interests include developing novel computational imaging methods for X-ray synchrotron facilities and electron microscopy.