AbstractID: 7851 Title: Progress in In-Line Phase-Sensitive X-Ray Imaging

Since Roentgen discovered x-ray and performed the first x-ray imaging over 100 years ago, x-ray medical imaging has always been based on the biological tissue's differences in x-ray attenuation. However, x-ray-tissue interaction causes x-ray phase shifts as well, and the phase-shift differences between different tissues are about one thousand times larger than their attenuation differences. The phase-sensitive x-ray imaging hence allows not only visualizing the tissues with very low attenuation-contrast, but also quantifying tissue's projected electron densities by means of the phase retrieval.

In this presentation we first introduce the concept of spatial coherence of x-ray wavefield and elucidate the mechanism of x-ray phase–contrast formation. We then review recent progress in the in-line phase-sensitive x-ray imaging.

Educational Objective:

1. Elucidate the mechanism of x-ray phase–contrast formation
2. Review recent progress in the in-line phase-sensitive x-ray imaging