

## **Construction of a Talbot Interferometer for Phase-Contrast Imaging**

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Contrast in standard x-ray images, like one would find in a doctor's office, is produced by variations in the absorption of x-rays by an object. Biological tissues absorb x-rays only weakly; these images generally can only detect dense objects or relatively large features. Phase-contrast x-ray imaging, by comparison, is sensitive to small variations in density, and thus provides a window into the structure of weakly absorbing objects at the micron scale. Although phase-contrast imaging techniques are often performed at highly-brilliant synchrotron light sources such as CHSS, some techniques can also be done with sufficiently powerful x-ray tube sources coupled with microfabricated x-ray optics. This project will involve the commissioning of a benchtop phase-contrast imaging system based on the Talbot self-imaging effect. The work will include equipment design and construction, integration with existing components, and characterization of the capabilities of the completed system.