Phase-contrast imaging at 100 keV on a conventional X-ray tube

This project demonstrates a Talbot-Lau interferometer with edge-on illumination [1] on a conventional high-energy source. The edge-on configuration can achieve the large aspect ratio needed to stop the high-energy radiation in the absorption gratings. The fabrication of such gratings for a conventional face-on geometry would not be possible with the current technology. An analysis of the performance of the system and images acquired at a tube voltage of 160 kVp and an interferometer design energy of 100 keV are shown, thus bringing the technique in the range of medical computed tomography as well as material science and security applications.

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1 C. David and M. Stampanoni, "A method for x-ray phase contrast and dark-field imaging using an arrangement of gratings in planar geometry", EP10167569.