# Mili-second 4D X-ray tomography using a multibeam X-ray imaging system

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Recently, we developed a new 4D X-ray characterization technique based on the multibeam X-ray imaging system[1]. Thirty-two incident X-ray beams in a wide angular range of around ±73° were created by four Si crystals located on three confocal hyperbolic benders with different focal distances. And all the beams were captured simultaneously by lens-coupling detector systems[2]. The CT was reconstructed by the standard Filtered Backprojection (FBP).

In this presentation, we report the developed high-speed 4D X-ray tomography technique. A dynamic process of bending the tungsten wire was reconstructed successfully with a temporal resolution of 1 ms. It is not necessary to rotate the sample, X-ray source, or detector at a high speed. We believe the *in-situ*/*in-vivo* measurement of the high-speed dynamic phenomenon and the unrepeatable process can be conducted such as living beings' behaviors, the fluid motion, the deformation and fracture behaviors in the material science, and so on.

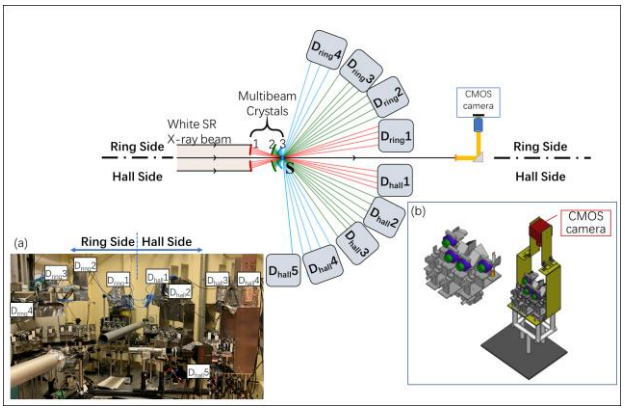


Figure 1. The layout of the multibeam X-ray imaging system. The inset (a) is the photo of the multibeam detector system and the inset (b) is the 3D structure of one detector.

Acknowledgments

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Reference

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