

## Interferometry Beamline

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This is an opportune time for introducing grating-based interferometry to the APS users by the construction of an interferometry/tomography beamline. The technique has been demonstrated to be robust, high-throughput, and applicable to many areas of research within the DOE mission. The metric of performance, interferometry visibility, requires the high phase coherence of APS-U. APS has the in-house expertise to build a world-class interferometry beam line having outstanding performance with the MBA-lattice upgrade. Interferometry requires high phase coherence; the samples will require high X-ray energy to over 100 keV as well as large beam size. High phase coherence enables fast, single-shot grating interferometry of dynamic processes such as in-situ additive manufacturing experiments. High X-ray energy enables materials science studies within complex objects such as batteries. Large beam size enables biomedical studies of organisms such as live rodents. Grating interferometry nicely complements existing APS expertise with ptychography and propagation-based phase contrast imaging.

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