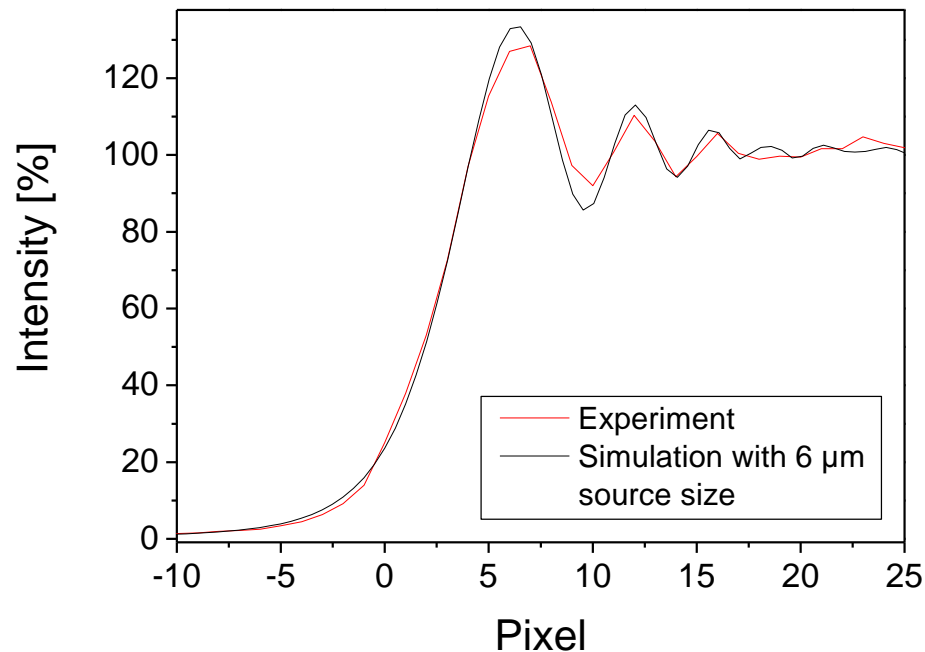


Coherent X-rays from a Tabletop Femtosecond Source

Boschetto *et al.*, Spatial coherence properties of a compact and ultrafast laser-produced plasma keV x-ray source. *Applied Physics Letters* 011106 Jan 1, 2007

D. Boschetto, G. Mourou, A. Rousse, A. Mordovanakis,
Bixue Hou, J. Nees, D. Kumah and Roy Clarke



Adaptive optics focusing of UM's kilohertz λ^3 laser onto a silicon target produces an ultrabright point-source of spatially coherent x-rays. Fresnel diffraction (shown on the left) from atomically smooth facets of a cleaved GaAs crystal shows an x-ray source size of $6\mu\text{m}$ with a transverse coherence length of $20\mu\text{m}$, 60cm from the source. This is comparable to the coherence from a synchrotron-based undulator source and offers exciting possibilities to perform x-ray speckle spectroscopy and time-resolved phase contrast imaging with a tabletop source.



Center for the Advancement of Frontiers in Optical Coherent and Ultrafast Science
The University of Michigan and the University of Texas at Austin
NSF Award 0114336