

Coherence measurements with double pinholes at FLASH2

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Abstract:

Since 2016 FLASH at DESY in Hamburg operates the variable-gap undulator beamline FLASH2 as a user facility. Young's double pinhole measurements were performed at photon beamline FL24 downstream of the Kirkpatrick-Baez focusing optics, which were installed in 2017. FLASH2 was characterized at wavelengths of 8, 13.5 and 18 nm and under different machine settings. The coherence length was determined from the interference pattern of several pinhole pair separations covering the width of the beam. A blind deconvolution algorithm was implemented to determine the coherence function from the partially coherent interference pattern. Simulations of the patterns including the Kirkpatrick-Baez focusing optics were implemented with WavePropagator (WPG), a software for X-ray wavefront propagation simulations developed at the European XFEL. We present first results of these coherence measurements and simulations.

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1. Introduction