

# PhotonMEADOW 2023

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## An X-ray beam property analyzer based on dispersive crystal diffraction for next-generation light sources

The advent of low-emittance X-ray sources necessitates the development of new beam diagnostic methods. Existing systems tend to provide limited information or inadequate spatial resolution. A newly-developed spatial beam property analyzer has been introduced, which comprises a double-crystal monochromator followed by a Laue crystal arranged in a dispersive diffraction configuration. Through the analysis of the beam pattern transmitted via this multi-crystal arrangement, the device is capable of concurrently measuring various spatial source attributes - including size, divergence, position, and angle - with high sensitivity. This presentation details the experimental validation performed at two bending magnet beamlines at the Swiss Light Source. Additionally, simulations are conducted to explore the feasibility of employing this analyzer for characterizing source properties of synchrotron undulator beamlines and X-ray free electron lasers.

### Journal of Synchrotron Radiation Special Issue: will you submit your contribution?

yes

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