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# Measurement of CSR-affected beams using generative phase space reconstruction

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Coherent synchrotron radiation (CSR) is a limiting effect in linear accelerators with dispersive elements due to its contribution to projected transverse emittance growth. This effect becomes a limitation for highly compressed beams. Even though CSR-induced projected emittance growth has been widely studied, conventional measurement techniques are not detailed enough to resolve the multi-dimensional structure of the beam, namely the different rotations of transverse phase space slices throughout the longitudinal coordinate. In this work, we simulate the reconstruction of a CSR-affected beam after a double dogleg at the Argonne Wakefield Accelerator Facility by using our generative-model-based six-dimensional phase space reconstruction method. Additionally, we study the current limitations of the phase space reconstruction method and perform an analysis of its accuracy and precision in simulated cases in preparation for the experimental demonstration.

## Working group

WG5 : Beam sources, monitoring and control

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