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## Complex bend prototype beamline commissioning result

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Modern synchrotron light sources are competing intensively to increase X-ray brightness and, eventually, approach the diffraction limit, which sets the final goal of lattice emittance. Recently, we propose a new optics solution aimed at reaching low emittance, using a lattice element "Complex Bend". The Complex Bend is a sequence of dipole poles interleaved with strong alternate focusing so as to maintain the beta-function and dispersion oscillating at low values. By integrating this element at low emittance lattice, the designed emittance is around 30 pm-rad. To prove the feasibility of this new design, we designed and fabricated the key element, prototype complex bend, with gradient at 140 T/m. It was installed in the beam line with 100-200 MeV beam energy at NSLS-II linac beamline and beam commissioned started in Jan. 2023. In this paper, we report the beam commissioning result.

### Footnotes

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North America

**Primary author:** WANG, Guimei (Brookhaven National Laboratory)

**Co-authors:** CHOI, Jinhyuk (Brookhaven National Laboratory); SONG, Minghao (Brookhaven National Laboratory); SHAFTAN, Timur (Brookhaven National Laboratory); YANG, Xi (Brookhaven National Laboratory); HIDAOKA, Yoshiteru (Brookhaven National Laboratory)

**Presenter:** WANG, Guimei (Brookhaven National Laboratory)

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