A great majority of the Advanced Photon Source (APS) users have chosen an undulator as the only source for their insertion device beamline. Compared with a wiggler source, the undulator source has a much smaller horizontal divergence, providing us with an opportunity to explore the possibility to extract multiple beamlines from a single straight section of the APS storage ring. A one-milliradian deflection between the two beams is the optimal permitted angle given the configuration of the existing hardware [1]. Based on the new APS front-end design for undulator-only operation [2], we have studied the feasibility of its modification for a one-milliradian canted double-undulator configuration.

In this paper, the designs and specifications, as well as the optical and bremsstrahlung ray-tracing analyses of the new APS front ends for canted double-undulator operation are presented. The compatibility of the original APS undulator/wiggler front ends with canted double-undulator operation is also discussed.

This work was supported by the U.S. Department of Energy, Office of Science, under Contract No. W-31-109-Eng-38.

References
