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Experimental demonstration of a straight-merger beamline

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Merging beams from multiple beamlines is critical to energy-recovering linear accelerators and beam-driven wakefield accelerators. Recently, a "straight-merger" beam line was proposed as a compact beamline to merge beams. The concept is based on a deflecting cavity with a superimposed dipole field. It provides a large deflecting kick at the injection phase where the RF and magnetic kicks add up ("deflecting mode") while a beam injected at a phase where the RF and magnetic field cancel out does not experience any net kick ("transparent mode"). A proof-of-principle beamline of this concept was built at the Argonne Wakefield Accelerator and experimentally tested. This contribution will discuss the experimental performances of the beamline.

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Footnotes

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Yes

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