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The Argonne Wakefield Accelerator Beam Test Facility for Novel Accelerator Research

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The Argonne Wakefield Accelerator (AWA) is a beam test facility at Argonne National Laboratory. It consists of a 65 MeV L-band photoinjector beamline, 3 additional independent photoinjector beamlines, and multiple flexible experimental areas. Its program is composed of three research themes: (1) Advanced Accelerator Concepts (AAC), (2) Beam Manipulation, and (3) Beam Production. The AAC theme focuses on primarily on Structure Wakefield Acceleration but also has a substantial Plasma Wakefield Acceleration program. The Beam Manipulation theme develops several manipulation methods including emittance exchange, flat-round beam transformations, transverse deflecting cavity based shaping and laser shaping. Beam production efforts include the operation of the world's high charge (100nC) photoinjector (AWA's Drive Gun) and a recently developed X-band gun demonstrated to operate at 400 MV/m. Research at the AWA operates on a collaborator model and is carried out by both in-house researchers and collaborators drawn from universities, national laboratories and industry from around the world. This talk will present recent research results, research capabilities and planned upgrades of the AWA facility.

Acknowledgments

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