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Brookhaven's ATF - a testbed for LPA collider research

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The Accelerator Test Facility (ATF) at Brookhaven National Laboratory is a DOE Office of Science User Facility that offers users three major beam capabilities: 75 MeV high-brightness electron beams, multi-terawatt long-wave infrared (LWIR) laser beams, and near-infrared (NIR) laser beams. A primary research focus for ATF users is the study of laser wakefield acceleration (LWFA) driven by an LWIR laser, which can efficiently generate macroscopic plasma bubbles. With the facility's provision of low-emittance and low-energy-spread relativistic electron bunches from a conventional linac, ATF provides an ideal setting for investigating LWFA seeding, phasing, and staging issues.
This discussion highlights recent and upcoming advancements at the ATF to meet the required laser and electron beam parameter ranges for exploring the most promising LWFA regimes pertinent to future colliders built upon laser-plasma accelerator (LPA) stages.

Working group

WG7 : Linear Colliders

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