

ELBA All-optical laser electron collider approaching $\chi_e \sim 1$ at ELI Beamlines

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Abstract:

The collision of a GeV electron beam with an intense (10^{21} W/cm²) counter-propagating laser pulse enables approaching $\chi_e \sim 1$. At ELI-Beamlines, we are completing the commissioning of the ELBA laser-electron collider that will enable such collisions at 3.3 Hz repetition rate within the next few years. The recent demonstration in ELBA of up to 5 GeV electron beams with all-optical guiding is a first step towards enabling the laser-electron collider.