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EARLI: designing a LWFA for AWAKE Run2

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Following a successful Run 1 experiment, AWAKE has developed a baseline plan for Run 2 that requires the implementation of a compact electron source for external injection of a witness bunch in the plasma wave. The feasibility of using a laser wakefield accelerator (LWFA) to produce the electron bunch is investigated. The EARLI project (Electron Accelerator driven by a Reliable Laser for Industrial uses) aims to design injectors ready for applications, the first being a stand-alone injector that meets AWAKE requirements. EARLI includes a laser system, a plasma cell and a transfer line, able to produce a high-quality electron beam and reliable and stable over long periods. For the EARLI design, methods from conventional accelerators are applied to the LFWA physics.

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