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AWAKE and future colliders

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Proton-driven plasma wakefield acceleration may allow to accelerate electrons to TeV energies in a single plasma stage. The concept is developed using the AWAKE facility, which already demonstrated electron acceleration to GeV energies over 10 m of plasma during Run 1. In 2022, AWAKE started Run 2, where the goal is to: 1) demonstrate stable accelerating gradients of 0.5–1 GV/m, 2) accelerate bunches of electrons with high beam quality, and 3) develop plasma sources scalable to 100s of meters and beyond. By the end of Run 2, the scheme developed in AWAKE should be able to provide electron beams for particle physics experiments and several possibilities have already been evaluated. This contribution summarizes the AWAKE Run 2 program as well as the possible application of the AWAKE scheme to novel particle physics experiments.

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