

2023 AWAKE Run Results

martedì 19 settembre 2023 09:00 (30 minuti)

The AWAKE experiment moved successfully from proof-of-concept to an experiment with a clear scientific roadmap towards accelerating electrons suitable for particle physics applications within the next decade. The goal is to produce high-charge electron-bunches accelerated to high energies (0.5-1 GeV/m), while maintaining beam quality and to develop plasma sources scalable to 100s of meters.

This talk will present preliminary results of the rich measurement program of 2023:

In May 2023, AWAKE profited from a unique opportunity during a 3-week proton-run to test a scalable plasma source prototype performing measurements with a 10m long discharge plasma source (DPS). Different gases, bunch charges, plasma densities and plasma lengths and their influence on the proton-bunch self-modulation, ion-motion, current filamentation instabilities and plasma light were studied; the DPS performance and preliminary results of the effects on the drive-beam train and wakefields are presented.

In July 2023, a new 10m long rubidium vapour source has been installed generating two regions of different densities to achieve higher gradients w.r.t. that currently achieved. The vapour source commissioning is described and preliminary performance results with the proton drive-beam are shown.

In addition, the challenges, key components and plans of the next phases in the AWAKE roadmap are highlighted.

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Classifica Sessioni: Plenary session

Classificazione della track: Invited