



Contribution ID: 1208 Contribution code: MOPR41

Type: **Poster Presentation**

## Results and plans for Run 2 of the Advanced Proton Driven Plasma Wakefield Acceleration Experiment

*Monday, 20 May 2024 16:00 (2 hours)*

This talk summarizes the plans, challenges and key components of the four phases in the AWAKE roadmap. In addition, an overview of the rich measurement program of the second phase, AWAKE Run 2b, during 2023 and 2024 is given. Results from a unique 3-week measurement opportunity with a 10m discharge plasma source prototype are shown, including the effects of different gases, plasma densities, bunch charges and plasma lengths on the proton bunch self-modulation, ion-motion, current filamentation instabilities and plasma light. A new 10 m long rubidium vapor source was installed in the summer of 2023 with the possibility to generate a density step (0-10%) every 50 cm along the first 4 m. First measurement results with this plasma cell are also presented, showing the positive effect of the density step on the plasma light as well as an increased energy gain for externally injected electrons.

### Footnotes

### Funding Agency

### Paper preparation format

Word

### Region represented

Europe

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**Session Classification:** Monday Poster Session

**Track Classification:** MC3: Novel Particle Sources and Acceleration Techniques: MC3.A22 Plasma Wakefield Acceleration