Contribution ID: **70** Type: **Poster**

Characterization and Localization of Vacuum Breakdowns in RFQ

In 2020, following a successful commissioning phase, CERN's Linear Accelerator 4 (Linac4) became the primary proton source for the CERN accelerator complex. The first accelerating structure in Linac4 is a 3-meter-long Radio-Frequency Quadrupole (RFQ), operating at an inter-vane voltage of 78 kV and a peak surface electric field of 34 MV/m. In 2025, a dedicated campaign was launched to condition and test a new RFQ, offering a valuable opportunity to investigate vacuum breakdown behavior in a structure with significantly different characteristics.

This poster presents preliminary results from studies aimed at understanding breakdown (BD) limitations in the new RFQ. In addition, it focuses on localizing breakdown events using signals from 16 antennas distributed along the cavity. These measurements are compared with RF simulations to correlate signal patterns with breakdown locations and gain insight into the underlying physical processes.

Please choose topic that matches most closely your research

Experiments and diagnostics

Author: MARTINEZ REVIRIEGO, Pablo

Presenter: MARTINEZ REVIRIEGO, Pablo

Session Classification: Poster session