Contribution ID: **9** Type: **Oral**

Recent results from the CERN pulsed DC systems

Tuesday, 20 September 2022 11:00 (30 minutes)

There have been several pulsed DC system experiments ongoing including recent measurements of field emission current fluctuations associated with dislocation motion showing a variation in the number of events per pulse and a dependence on breakdowns. Also, results of a study comparing the optical spectra obtained during field emission experiments without breakdown from different materials, showing a dependence of light intensity on the voltage and the spectra for different materials. As part of the different material tests, a study of the effects of H- irradiation on different materials, giving values for the field reached during conditioning for irradiated and non-irradiated electrodes and the locations of breakdowns.
The pulsed DC systems are dedicated to the study of vacuum electrical breakdown phenomenon in relation to high gradient RF applications as part of the Compact Linear Collider (CLIC) project at CERN. These systems consist of 2 high precision machined electrodes placed parallel to one another with gap of up to 100μm. A high-voltage feedthrough supplies a voltage of up to 10kV at pulse lengths between 1μs and 1ms.

Topic

Experiments and Diagnostics

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Session Classification: Experiments & Diagnostics

Track Classification: Experiments