Contribution ID: **18** Type: **Virtual Poster**

Application of Machine Learning to Breakdown Prediction in CERN's High-Gradient Test Stands

Wednesday 10 March 2021 16:25 (20 minutes)

Vacuum arcs (breakdowns) limit operation in high-gradient accelerating structures and other high-voltage vacuum devices. To investigate the phenomenon a collaboration has been established at CERN to explore the application of machine learning in the CLIC (Compact Linear Collider) high-gradient test stands.

Currently, a machine learning framework has been developed to analyse the test stand data with the objective of predicting the occurrence of vacuum arcs in CERN's high-gradient prototype accelerating structures. The results may then shed light on the fundamental physics of vacuum arcs and aid in the development of operational tools to improve reliability in modern high-gradient accelerator facilities.

A general overview of the ongoing work is presented, highlighting the motivation for applying machine learning, its potential utility, and plans for the future.

Authors: Mr MILLAR, Lee (Lancaster University (GB)); OBERMAIR, Christoph (Graz University of Technology (AT)); APOLLONIO, Andrea (CERN); CARTIER-MICHAUD, Thomas (CERN); WUENSCH, Walter (CERN)

Presenter: Mr MILLAR, Lee (Lancaster University (GB))

Session Classification: Poster Session