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

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CERN has established several high-power RF test stands, to investigate high-field phenomena. Recently, a machine learning framework has been developed and applied to the high-gradient cavity test data from these facilities. The aim has been to search for the existence of previously unrecognized features related to the incidence of RF breakdowns. Preliminary results have shown two key features in the data which are associated with emerging breakdowns. A general overview of the methodology is provided, the found phenomena are presented, and the plans for future studies are discussed.

Topic

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