

High Gradient S-Band experiments at IFIC

Tuesday, 20 April 2021 09:00 (30 minutes)

The IFIC High-Gradient (HG) Radio Frequency (RF) laboratory is designed to host a high-power infrastructure for testing HG S-band normal-conducting RF accelerating structures. The main objective of the facility is to develop HG S-band accelerating structures and to contribute to the study of HG phenomena. A particular focus is RF structures for medical hadron therapy applications. The design of the laboratory has been made through collaboration between the IFIC and the CLIC RF group at CERN. The layout is inspired by the scheme of the Xbox-3 test facility at CERN, and it has been adapted to S-band frequency. Currently, one of the two new normal-conducting HG S-band (2.9985 GHz) Backward Travelling Wave (BTW) accelerating cavities ($\beta=0.38$) designed and constructed by the TERA Foundation in collaboration with the CERN RF team, is being tested at the IFIC HG-RF laboratory. The main goal of the tests is understanding what the maximum achievable accelerating gradient of this new design and characterize the dark current formation in the structure, which could limit the applicability of this technology for medical applications. In this talk we present the progress made on the operation of the laboratory, first results on the conditioning of the BTW S-band accelerating cavity and future plans.

Summary

Presenter: FUSTER, Nuria (IFIC)

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