

International Workshop on Breakdown Science and High Gradient Technology (HG2021)

Contribution ID: 45

Type: **not specified**

Model and observations linking plastic activity to arc nucleation

Wednesday, 21 April 2021 07:30 (30 minutes)

High Gradient breakdown is commonly assumed to trigger due to the formation of localized plasma enabling breakdown initiation. In this talk I will describe a model in which the initiating process is caused by stochastic fluctuations of the mobile dislocation population in the cathode. In this model, the mobile dislocation density normally fluctuates, with a finite probability to undergo a critical transition due to the effects of the external field. The model is fitted to experimental data of the dependence of the breakdown rate on the applied electric field's strength and temperature. The model assumptions are consistent with findings of a metastable array of mobile dislocations in copper cathodes. Finally, I will describe recent results of pre-breakdown fluctuations, which are consistent with the fluctuations predicted within the model.

Summary

Presenter: Dr ASHKENAZY, Yinon (Racah Institute of Physics- Hebrew University of Jerusalem)

Session Classification: Session 6