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Breakdown-loaded electric field as a high gradient limit

Monday 16 September 2019 17:00 (20 minutes)

A novel quantity for predicting the ultimate performance of high-gradient radiofrequency accelerating structures is presented and compared with earlier quantities that it builds on such as the modified Poynting vector. This new method models a nascent RF breakdown as a current-carrying antenna and calculates the coupling of the antenna to the RF power source. Along with a simple emission model fitted to experimental data, an equilibrium breakdown-loaded surface electric field distribution is calculated and found to be well-correlated with spatial breakdown distributions.

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