HOT TOPIC: MEDIUM FIELD Q-SLOPE AND PATHS TO HIGH-Q OPERATION

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Abstract

Superconducting RF cavities for accelerator application offer, at least in principle, the perspective of large accelerating gradients and low RF losses. Both qualities must proceed reciprocally. Therefore, consequent to the achieved increase in accelerating gradient during recent years, the RF losses must be reduced accordingly, in order to keep the cryogenic installation at reasonable size. However, the Q-value, which describes the RF losses, did not follow the improved accelerating gradient as wished or required. The reasons are physical mechanisms, only partly understood, on top of the residual losses, that provoke a more than quadratic increase of the RF losses with the accelerating gradient (Q-slope). Cures have been identified experimentally to some extent, but both the theoretical understanding and a complete elimination of the"Q-slop" are lacking. The hot topic discussion should open the floor for a new and deeper understanding of the"Q-slop".

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