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RF breakdown study on choke-mode damped accelerating structures

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X-band high gradient accelerating structures has been studied in Tsinghua University, especially the choke-mode damped structure. Several single-cell standing-wave structures have been built for high power test. One choke-mode structure achieved a max gradient of 75 MV/m and the choke breakdown limited further increasing of the gradient. Postmortem inner surface inspection of the choke-mode cavities indicates that the axial part of the choke limits the performance of the structure. This phenomenon is comparable to what is observed in DC system with two parallel plates. Based on this observation, two new choke-mode cavities are designed and manufactured for testing. Details of the structure and high-power test result as well as the RF breakdown analysis will be presented.

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Experiments and Diagnostics

Author: SHI, Jiaru (Tsinghua University)

Presenter: SHI, Jiaru (Tsinghua University)

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