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HOM suppression study for the C-band accelerating structure

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The C-band (5.712 GHz) accelerating structure with distributed coupling and four waveguide manifolds for HOM damping has been studied at Los Alamos National Laboratory to evaluate suppression of the higher-order-modes (HOMs). The HOM damping manifolds were covered by Nickel Chrome (NiCr) and had rounded edges at the interface of the waveguide with accelerating cavities. In this design study, we modeled a 20-cell accelerating structures and calculated the Q-factors and the transverse kick factors for the wakefields in the frequency range up to 40 GHz. Simulations were performed with the Omega3p code. The goal of the study was to bring all Q-factors below 10000 and kick-factors \times Q-factors below 1000 V/pC/mm/m for all major HOMs. This presentation will summarize the results of the study.

Footnotes

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