



Contribution ID: 118

Type: **Oral presentation (in person)**

Cold Copper High Gradient Single-Cell Structure Tests

Wednesday 10 July 2024 10:00 (20 minutes)

We will present results from high gradient structure testing of C-band single-cell copper (Cu) and copper silver (CuAg) accelerating structures at 77 K. C-band accelerators have been of particular interest in recent years due to their ability to provide high gradients and transport high charge beams for applications ranging from colliders to medical technologies. These technologies are made possible by new advances in high gradient technologies that can suppress the breakdown rates by using distributed coupling, cryogenic cooling, and copper alloys. Previous work has shown each of these separately to significantly improve the maximum achievable gradient. In this work, for the first time, we combine all three methods in an ultra-high gradient structure and benchmark the difference between Cu and CuAg. These structures are tested at 77K simultaneously through a hybrid manifold while breakdown statistics were collected. In addition, we will show that at gradients exceeding 200 MeV/m the presence of significant beam loading caused a suppression in the quality factor as a function of time.

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Primary authors: KRASNYKH, Anatoly; DHAR, Ankur; NANNI, Emilio (SLAC National Accelerator Laboratory); SCHNEIDER, Mitchell

Presenter: NANNI, Emilio (SLAC National Accelerator Laboratory)

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