SRF2025 TOKYO

22ND INTERNATIONAL CONFERENCE ON RF SUPERCONDUCTIVITY

September 21-26, 2025

Contribution ID: **207** Contribution code: **THP09** Type: **Poster Presentation**

Magnetic field sensitivity of a QWR under different cooldown dynamics

Thursday 25 September 2025 14:30 (3 hours)

The sensitivity of the surface resistance of SRF cavities depends on several aspects, such as the specific surface and heat treatment of the cavity. The the cooldown dynamics as the cavity transitions into the superconducting (sc) state also influence the performance if there is an external magnetic field. Both temperature gradient across the cavity and speed of the superconducting front have been shown to be impacting the performance. But also the direction of movement of the superconducting front impacts the performance as magnetic fields are pushed by the superconducting front. Quarterwave resonators (QWR) have a complex geometry with their closed inner conductor. Depending on the cooldown dynamics, the magnetic flux could be pushed to either the tip of the inner conductor with low rf surface currents, or to the short plate of the cavity with high rf surface currents. In previous measurements of the TRIUMF multimode QWR the SC front moves from outer conductor to the inner conductor. In the presented paper, the direction has been reversed to show the effects of the direction of movement of the sc front on the cavity performance.

I have read and accept the Privacy Policy Statement

Yes

Footnotes

Funding Agency

Author: KOLB, Philipp (TRIUMF)

Co-authors: LAXDAL, Robert (TRIUMF); Mr STOKES, Will (TRIUMF; University of Victoria); YAO, Zhongyuan (TRIUMF)

Presenter: KOLB, Philipp (TRIUMF)

Session Classification: Thursday Poster Session

Track Classification: MC2: Fundamental SRF research and development