Contribution ID: **137** Type: **Poster**

Magnetic Flux Expulsion Studies of Horizontally Cooled Single Cell Cavity

Wednesday, 13 April 2016 17:30 (2 hours)

The cooldown of a superconducting cavity through its critical temperature is a crucial step in which external magnetic field might be trapped in the cavity surface, improving the radio-frequency (RF) surface losses. In particular, fast and slow cooldowns determine considerable differences in terms of trapped magnetic flux and RF cavity performance.
In order to understand the nature of these differences, the temperature all around the cavity is monitored with a T-map system during different cooldown. The study is performed placing a single cell 1.3 GHz elliptical cavity perpendicularly to the helium cooling flow, which is representative of how SRF cavities are cooled in the cryomodules of particle accelerators.
In addition, the cooldown details of the cavity horizontally cooled are analyzed in order to fully understand the differences with the vertical cooldown configuration. The study involves the analysis of the trapped magnetic flux as a function of both different cooldown details and different directions of external magnetic field.
Experimental data proves that under established condition, flux lines are concentrated at the top of the equatorial region, leading to localize temperature rise.

Primary author: MARTINELLO, Martina (Fermilab - IIT)

Co-authors: ROMANENKO, Alexander (Fermilab); GRASSELLINO, Anna; SERGATSKOV, Dmitri (Fermilab); CHECCHIN, Mattia (FNAL - IIT); MELNYCHUCK, Olexandr (Fermilab); POSEN, Sam (Fermilab)

Presenter: MARTINELLO, Martina (Fermilab - IIT)

Session Classification: Poster session

Track Classification: Superconducting RF