



SRF cavity testing at the CERN superconducting cavities and magnet test facility

Project code	64
Supervisor	Franck PEAugER
Department	BE
Title	
SRF cavity testing at the CERN superconducting cavities and magnet test facility	
Description	
<p>RF characterization of superconducting cavities at the CERN superconducting cavity and magnet test facility. The SRF section is responsible for the performance tests of several types of superconducting cavities for the present and future CERN accelerators. These include 400 MHz elliptical single cells for LHC, 101 MHz Quarter Wave Resonators for the HIE ISOLDE linac, and 400 MHz crab cavities of the High Luminosity LHC project. The standard characterization includes the classical Q-E curves, surface impedance versus temperature between 1.9 K and 10 K, Lorentz force detuning. This is accomplished by means of Phase Locked Loop and Self Excited Loop systems to lock the tested cavities at their resonance frequency. Other types of characterization, such as field expulsion/trapping experiments or quench detection and thermal mapping may be need in specific cases.</p>	
Functions and Training Value	
<p>You will be integrated in SM18 cold testing team. The training value of the project includes precision RF measurements, introduction to superconducting cavities and the related test infrastructure, controls electronics and software for cold testing, physical interpretation of surface impedance and other cavity parameters, accurate documentation and reporting, and teamwork in a professional environment.</p>	
Qualifications/Skills	
<p>Good knowledge of electromagnetism, elementary knowledge of superconductors in RF fields would be an asset, metrology, data processing, analysis and reporting. Laboratory work requiring care, reliability, patience and willingness to develop manual skills for cavity handling and mounting on the test stand.</p>	