

"Field emission study on cERL main linac cryomodule"	Kensei Umemori
"Field emission studies for ESS prototipe cryomodules and vertical test diagnostic"	Stephane Berry
"Plans for beam-loss and field-emission detection in LCLS-2"	Alan Fisher
"Overview on coupler protection"	Tom Powers
"Robotic High Pressure Rinsing of Complex Geometry SRF Cavities"	Joe Whaley
"The use of robotics in cavity preparation and assembly procedures"	Stephane Berry
Plasma cleaning development for LCLS-II cavities	Bianca Giaccone
"T-mapping, B-measurements and vertical diagnostics at Cornell"	Ryan Porter
"INFN-LASA experience on vertical cold test diagnostics"	Carlo Pagani
"Combined magnetometric and thermometric characterisation of a TESLA type cavity cooled down in an external magnetic field"	Oliver Kugeler
"Transition Edge Sensors for Thermal Mapping as a diagnostics tool on bulk Niobium SRF Cavities"	Giovanna Vandoni
"Magnetic field sensors and measuraments in cryomodules"	Genfa Wu
"Three Axis Helmholtz coil Configuration for Flux Trapping Studies at TRIUMF"	Andrew Cote
"Magnetic Field Diagnostics at the DESY Vertical Teststands"	Marc Wenskat
"HF-free bipolar EP - progress unraveling the mechanism and optimizing for multi-cell cavities"	Charlie Reece, Hui Tian
"Cavity etching via rf Ar/Cl plasma"	Jeremy Peshl
"Green processing of cavities via vibro-tumbling"	Cristian Pira
"Vertical EP and green EP progress at Cornell"	James Maniscalco
"EP Developments at TRIUMF"	James Keir

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KENSEI UMEMORI "FIELD EMISSION STUDY ON CERL MAIN LINAC CRYOMODULE"

STEPHANE BERRY "FIELD EMISSION STUDIES FOR ESS PROTOTYPE CRYOMODULES AND VERTICAL TEST DIAGNOSTIC"

ALAN FISHER "PLANS FOR BEAM-LOSS AND FIELD-EMISSION DETECTION IN LCLS-2"

LCLS-2, a superconducting linac with continuous RF and a maximum beam rate of 1 MHz is now being installed to replace the first km of the 3-km SLAC copper linac. The beam will have an energy of 4 GeV and a maximum power of 250 kW, with an 8-GeV upgrade to follow. The high power in the beam and potentially in cavity field emission have motivated simulations of the ionization detectors used for LCLS beam loss. At high loss power, ion space charge can pile up due to the slow transit time, leading to a nonlinear response. Instead, we have completed extensive experiments with point and long loss monitors based on diamonds and radiation-hard optical fibers, respectively. The fibers have demonstrated sensitivity to field emission from an LCLS copper linac section and from a CEBAF cryomodule at Jefferson Lab. They will be installed along the full 4 km of LCLS-2, from gun to beam dump, in approximately 200-m lengths. Charge from each detector will accumulate on a capacitor that discharges with a 500-ms time constant. The beam will halt within 0.1 ms after the capacitor voltage exceeds the safety threshold.

TOM POWERS "OVERVIEW ON COUPLER PROTECTION"

JOE WHALEY "ROBOTIC HIGH PRESSURE RINSING OF COMPLEX GEOMETRY SRF CAVITIES"

STEPHANE BERRY "THE USE OF ROBOTICS IN CAVITY PREPARATION AND ASSEMBLY PROCEDURES"

BIANCA GIACCONE PLASMA CLEANING DEVELOPMENT FOR LCLS-II CAVITIES

RYAN PORTER "T-MAPPING, B-MEASUREMENTS AND VERTICAL DIAGNOSTICS AT CORNELL"

CARLO PAGANI "INFN-LASA EXPERIENCE ON VERTICAL COLD TEST DIAGNOSTICS"

OLIVER KUGELER "COMBINED MAGNETOMETRIC AND THERMOMETRIC CHARACTERISATION OF A TESLA TYPE CAVITY COOLED DOWN IN AN EXTERNAL MAGNETIC FIELD"

GIOVANNA VANDONI "TRANSITION EDGE SENSORS FOR THERMAL MAPPING AS A DIAGNOSTICS TOOL ON BULK NIOBIUM SRF CAVITIES"

The cavity testing facilities at CERN comprise the 4 vertical cryostat stations in building SM18 and a smaller cryostat dedicated to QPR and small cavity tests in the Cryolab. A large variety of cavities are tested in the facilities: niobium thin film cavities for the HIE-ISOLDE project and the LHC machine spares and small elliptical cavities for thin-film R&D, the bulk niobium prototypes of crab-cavities for the HiLumi project, the 704MHz 5-cell high-gradient cavities (former SPL) for R&D studies. With such a large variety and limited human resources, thermal mapping diagnostics has been tackled by remote sensing of second sound in superfluid helium for the bulk niobium programmes.

To improve the possibilities offered by second sound sensing to map thermal excitations, a new type of Transition Edge Sensors has been developed and qualified in the last 2 years at CERN. These are miniaturized resistors in thin-film superconducting alloys, micro-fabricated on insulating wafers. An extensive campaign of optimization of design, fabrication process and composition was accompanied by qualification in a calibration cryostat with localized and extended heat sources. Reproducibility and stability, then the intensity, distance and angular dependence of the response were assessed on laboratory scale and compared to OSTs.

The TES were then installed as diagnostics tool in one vertical cryostat and used during tests of the un-jacketed proof-of-principle double-quarter-wave crab cavity for HiLumi. This cavity features a self-pulsing quench. The statistical analysis of the correlated time-lags between the responses of 4 sensors closely disposed within a 7-cm diameter circle allows to localize the origin of the quench spot close to a high electric field region – suggesting a point of impact of field emitted electrons.

We believe our TES are now mature for installation and use in other bare cavity testing facilities.

GENFA WU "MAGNETIC FIELD SENSORS AND MEASUREMENTS IN CRYOMODULES"

ANDREW COTE "THREE AXIS HELMHOLTZ COIL CONFIGURATION FOR FLUX TRAPPING STUDIES AT TRIUMF"

MARC WENSKAT "MAGNETIC FIELD DIAGNOSTICS AT THE DESY VERTICAL TESTSTANDS"

The status of the magnetic field diagnostics at DESY will be presented. The influence of the vertical test infrastructure and the cool down procedure on the sensors is currently investigated, in order to understand preliminary measurements on cavities. The experimental findings together with cavity measurements will be presented.

CHARLIE REECE, HUI TIAN "HF-FREE BIPOLAR EP - PROGRESS UNRAVELING THE MECHANISM AND OPTIMIZING FOR MULTI-CELL CAVITIES"

JEREMY PESHLE "CAVITY ETCHING VIA RF AR/CL PLASMA"

CRISTIAN PIRA "GREEN PROCESSING OF CAVITIES VIA VIBRO-TUMBLING"

Centrifugal Barrel Polishing is a common tool in the Nb bulk SC cavities production, prior to EP. Indeed, the mechanical polishing is fundamental also in the superconducting thin film resonant cavities in which one of the main issues that limits the performances is the surface preparation.

A less explored alternative to barrel polishing and grinding is the vibro-tumbling mechanical polishing, that could be easily adapted to any cavity geometry, both for Nb and Cu surface preparation.

In the present work, the novel and very promising results on 6 GHz resonant cavities are shown.

JAMES MANISCALCO "VERTICAL EP AND GREEN EP PROGRESS AT CORNELL"

JAMES KEIR "EP DEVELOPMENTS AT TRIUMF"

Over the past four years, TRIUMF has been developing Electro-Polishing (EP) for use in fundamental studies of SRF cavities. The majority of the time has been to develop a reliable Vertical Electro-Polishing (VEP) for 1.3 GHz single cell cavities with the goal to remove a uniform 5micron surface layer to support N-doping studies. The results of different variations of cathode sizes, paddle geometries and inclusion of a cathode membrane are compared.