

**First international workshop on Diagnostics and Instrumentation for Superconducting Magnets (IDSM 01),
Berkeley, CA - April 24-26, 2019**

Wednesday, Apr 24

Author (institute) - Title

8:00 AM Arrival, inscription

8:15 AM Workshop opening, Maxim Marchevsky and Gerard Willering

Key challenges - Setting the Scene

8:30 AM Soren Prestemon (LBNL) - Instrumentation and diagnostics development within US MDP and BCMT

9:00 AM Kathleen Amm (BNL) - Instrumentation and diagnostics perspectives at BNL

9:30 AM George Velev (FNAL) - Instrumentation and diagnostics development at FNAL

10:00 AM Steve Gourlay (LBNL) - to be confirmed

10:30 AM Coffee break

11:00 AM Lance Cooley (NHMFL) - Diagnostics needs for advanced conductor development and high-field magnets

11:30 AM Joe Minervini (MIT) - Magnet instrumentation and diagnostics development needs for fusion applications

12:00 PM Panel Discussion

12:30 PM **Discussion to summarize instrumentation and diagnostic needs / working lunch**

Training and Precursors

1:15 PM Stoyan Stoynev (FNAL) - Analysis of magnet training statistics

1:45 PM Maxim Marchevsky (LBNL) - Analysis of quench precursors and transient magnet mechanics with acoustic emission

2:15 PM Michal Duda (CERN) - Measurement of Electrical and Mechanical Transients in Nb3Sn magnets

2:45 PM Gerard Willering (CERN) - Quench Localisation in model and prototype magnets and coil displacement determination using precursor data

3:15 PM Coffee break

Quench Detection & Localization

topic:
capacitive
detection

3:30 PM Federico Scurti (NCSU) - Rayleigh scattering technique for quench detection and localization

4:00 PM Emmanuele Ravaioli (CERN) - Capacitive magnet diagnostics and quench detection

4:25 PM Daniel Davis (NHMFL) - Localization of Stray-Capacitance Heat Detection in Bi-2212 Magnets

4:45 PM Yanlang Hu (CAS) - Quench detection using radio frequency wave technology

5:15 PM Makoto Takayasu (MIT) - MEMS acoustic-sensor method for quench detection of CICC magnets

5:45 PM Maxim Marchevsky (LBNL) - Active ultrasonics for quench detection and mechanical interfaces diagnostics

Thursday, Apr 25

Instrumentation & Diagnostics (I)

8:30 AM Phil Michael (MIT) - Voltage-based detection diagnostics challenges in multiple-coil systems

9:00 AM Diego Arbelaez (LBNL) - Strain sensors and strain analysis techniques

9:30 AM Toru Ogitsu (KEK) - Review on magnetic quench antennas for accelerator magnets

10:00 AM Joe DiMarco (FNAL) - Advanced rotation PCB probes for magnetic measurements

10:30 AM Coffee break

Data Analysis

10:45 AM Mustafa Mustafa (LBNL/NERSC) - Deep Learning and Capabilities for Scientific Applications

11:45 AM Laurie Stephey (LBNL/NERSC) - Deep Learning models for classifying transient events in magnets

12:15 PM Michal Duda (CERN) - Carpenter: superconducting magnet test facility management system

12:45 PM **Discussion on the diagnostic techniques and data analysis / working lunch**

1:15 PM LBNL lab visit

3:15 PM Coffee break

Conductor Diagnostics

topic:
CORC conductor

3:30 PM Emanuela Barzi (FNAL) - A cable-scale experiment to predict training characteristics of superconducting magnets and explore new magnet materials

4:00 AM Jeremy Weiss (AST) - HTS CORC cable diagnostics

4:20 PM Virginia Phifer (NHMFL) - Studies of current sharing in HTS CORC conductors

4:40 PM Dmitro Abraimov (NHMFL) - HTS conductor characterization in very high fields

5:10 PM Ian Pong (LBNL) - Rutherford Cable Quality Control and Characterization

5:40 PM Steven Krave (FNAL) - Mechanical and acoustic emission studies of cable 10-stacks

6:45 PM **Workshop dinner**

Friday, Apr 26

DAQs and Hardware

topic:
MTF hardware

8:30 AM Piyush Joshi (BNL) - Data acquisition and electronics choices for large magnet testing

9:00 AM Marcos Turqueti (LBNL) - Cryogenic DAQs and FPGAs for magnet diagnostics

9:30 AM Jerome Allard (CEA-Saclay) - Custom acquisition system aimed at IRFU analogical Magnet Security Systems

9:50 AM Philippe DeAntonie (CEA-Saclay) - Architecture of a Magnet Safety System using a CompactRIO system and LabView

10:10 AM Sony Trieste (CEA-Saclay) - Analog high voltage isolated front ends for a digital Magnet Safety System using a CompactRIO

10:30 AM Coffee break

Instrumentation & Diagnostics (II)

11:00 AM Bernardo Castaldo (CERN) - Diagnostics for optical fibers for strain and temperature measurements

11:30 PM Honghai Song (BNL) - Recent Magnetic Field Measurements of Full-Length Production MQXFA Magnets for the LHC Hi-Lumi Upgrade

12:00 PM Gerard Willering (CERN) - Methods for performance diagnostics for Nb3Sn accelerator magnets used in the CERN superconducting magnet test facility

12:30 PM Closing remarks