WG 8 Cavity & Module Testing

The conveners seek short (3~5 slides), specific contributions under the following topics related to cavity/tuner/cryomodule tests for SRF. Relevant poster contributions recycled from other venues are encouraged, as well as new recent results. We seek to stimulate active, informed discussion. Please contact Detlef Reschke (detlef.reschke-at-desy.de), Elmar Vogel (elmar.vogel-at-desy.de), Kensei Umemori (kensei.umemori-at-kek.jp), or Camille Ginsburg (ginsburg-at-fnal.gov) for contribution coordination.

Tue., March 25th, 4.5 hours, 13:30-18:00
Wed., March 25th, 4 hours, 8:30 – 12:30

1. Design, setup and commissioning of test infrastructure
   - Conformity with various infrastructure constraints (cavity size/frequency, modules size with respect to service pipe locations, RF power for different frequencies, test inserts, etc.)
   - Lessons learned during commissioning
   - Calibration
   - Precision of measurements (error analysis)
2. Test programs: duration, what is measured and why, what can be optimized?
   - R&D vs. production-style testing differences, including instrumentation
   - Cooldown rates [avoid overlap with WG5 – here we focus on test experience]
   - Pressure vessel issues [avoid overlap with WG5 – here we focus on test stands]
3. Tuner tests [avoid overlap with WG5 – here we focus on test experience]
   - qualification tests
   - lifetime and reliability - statistics, risk mitigation
4. Modifications to test programs for high Q0
   - Variable/matched coupling to determine performance accurately?
   - Slow cooldown vs. fast cooldown (from 20K to Tc); thermal cycling at the test stands– what are the practical limits?
5. Radiation
   - What sets the test stand radiation limits?
   - DESY now measures below the cavity as well as above. Definition of usable gradient has changed. Foreseen impact to XFEL and possibly other projects?
   - Experience with field emission being accelerated by neighboring cavities
   - Calibration of radiation levels from VT to CM test, and from lab-to-lab
6. Experience with cavity performance changes, and possible reasons
   - From vertical test to horizontal test to cryomodule test
   - Within a cryomodule over time, either in the beamline or on the test stand