# RF structures and sources working group

Conveners:
Chris Adolphsen, SLAC
Walter Wuensch, CERN

The CLIC study is developing and testing drive linac power generating structures, the interconnecting rf network and accelerating structures.

Our highest profile activity is of course the 100 MV/m accelerating gradient demonstration

- but -

there are many other issues to consider as we move beyond this.

Summary of our main activities:

- Integrated beam dynamics with rf and wakefield design
- Prototype and test structure manufacture and high power testing
- High-power test areas, both beam driven and klystron based
- Breakdown theory, scaling laws and experiments
- Pulsed surface heating studies
- Precision manufacture
- Instrumentation, wakefield monitors
- Module integration
- Mass production considerations

## RF structures and sources working group sessions in this workshop:

1a. Joint session with beam dynamics and instrumentation on performance requirements

1b. Related high-gradient activities and first talks on testing.

2. X-band test structure fabrication and testing

3. Breakdown theory and simulation

4. Joint session with test facilities on high-power X-band test facilities

5. Joint session with instrumentation on wakefield monitors and cavity BPMs

6. Breakdown experiments, dc spark and pulsed surface heating studies

# 1a: Joint session with beam dynamics and instrumentation on performance requirements

**Wednesday 15 October 2008**
**Common Session (Instrumentation) (Main & Drive Beam Dynamics) (RF Structures & Sources) - Council Chamber (08:30-10:30)**
**- Conveners: Blair, Grahame; Lefevre, Thibaut; Biscari, Caterina; Schulte, Daniel; Adolphsen, Chris; Wuensch, Walter**

time title presenter
08:30 Main Linac Beam Dynamics SCHULTE, Daniel
08:50 Discussion
09:00 Drive Beam Dynamics ADLI, Erik
09:20 Discussion
09:30 Phase Stability Requirements SCHULTE, Daniel
09:50 Discussion
10:00 Coffee break

# 1b: Related high-gradient activities and first talks on testing.

**Wednesday 15 October 2008**

**RF Structures & Sources Parallel Session - 40-S2-C01 (08:30-10:00)**

**- Conveners: Dr. Wuensch, Walter; Adolphsen, Chris**

time title presenter

08:30 Recent ANL 7.8 GHz Power Extraction Experiments GAI, Wei

08:50 Discussion

08:55 High Gradient Results from the Muon Program NOREM, Jim

09:15 Discussion

09:20 Conditioning Software used in CTF3 DUBROVSKIY, Alexey

09:40 Discussion

For coffee please go to Council chamber

# 2: X-band test structure fabrication and testing

**Wednesday 15 October 2008**
**RF Structure & Sources Wkg - Council Chamber (10:30-16:30)**
**- Conveners: Adolphsen, Chris; Wuensch, Walter**

time title presenter
10:30 KEK Structure Development HIGO, Toshiyasu
10:50 Discussion
11:00 KEK Special Test Structure Fabrication HIGASHI, Yasuo
11:20 Discussion
11:30 SLAC WANG, Juwen
11:50 Discussion
12:00 Master Schedule + CLIC Activities RIDDONE, Germana
12:20 Discussion
12:30 Lunch break
14:00 KEK testing HIGO, Toshiyasu
14:20 Discussion
14:30 SLAC1 testing ADOLPHSEN, Chris
14:50 Discussion
15:00 SLAC2 testing TANTAWI, Sami
15:20 Discussion
15:30 30 GHz DOEBERT, Steffen
15:50 Discussion
16:00 Coffee break

# 3: Breakdown theory and simulation

**Thursday 16 October 2008**
**RF Structure & Sources Wkg - Council Chamber (08:30-10:35)**
**- Conveners: Adolphsen, Chris; Wuensch, Walter**
time title presenter
08:30 Breakdown & Pulsed Surface Heating Studies: Plasma MATYASH, Konstantin
08:50 Discussion
08:55 Breakdown & Pulsed Surface Heating Studies: Surface + Integrated Simulation TIMKO, Helga
09:15 Discussion
09:20 Breakdown & Pulsed Surface Heating Studies: On the pulse shape dependence of the rf breakdown rate in accelerating structures
GRUDIEV, Alexej
09:40 Discussion
09:45 From Natural Mutation to DC Breakdown LEVINSEN, Yngve Inntjore
10:05 Discussion
10:15 Coffee break

# 4. Joint session with test facilities on high-power X-band test facilities

**Thursday 16 October 2008**
**Common Session (RF Structures & Sources) (Linear Collider Test Facilities) - Council Chamber (10:30-14:00)**
**- Conveners: Adolphsen, Chris; Wuensch, Walter; Tauchi, Toshiaki; Corsini, Roberto**

time title presenter
10:30 NEXTEV MATSUMOTO, Shuji
10:50 Discussion
10:55 SLAC + 12 GHz Klystron TANTAWI, Sami
11:15 Discussion
11:20 Introduction to the CERN Klystron Test Area SCHIRM, Karl-Martin
11:40 Discussion
11:45 Design & Planning Progress of the CERN Klystron Test Area PEAUGER, Franck
12:05 Discussion
12:10 TBTS Status SYRATCHEV, Igor RUBER, Roger
12:30 Discussion
12:35 Lunch break

# 5: Joint session with instrumentation on wakefield monitors and cavity BPMs

**Thursday 16 October 2008**
**Common Session (Instrumentation) (RF Structures & Sources) - Council Chamber (14:00-16:00)**
**- Conveners: Blair, Grahame; Lefevre, Thibaut; Adolphsen, Chris; Wuensch, Walter**
time title presenter
14:00 Wakefield Monitor Development & Tests in the
TBTS
PEAUGER, Franck
14:20 Discussion
14:30 High Resolution BPM SYRATCHEV, Igor
14:50 Discussion
15:00 Fermilab BPM Development Plans WENDT, Manfred
15:20 Discussion
15:30 Coffee break

# 6: Breakdown experiments, dc spark and pulsed surface heating studies

**Thursday 16 October 2008**
**RF Structure & Sources Wkg - Council Chamber (16:00-18:10)**
**- Conveners: Adolphsen, Chris; Wuensch, Walter**

time title presenter
16:00 Diagnostics for Breakdown Experiments KOVERMANN, Jan
16:20 Discussion
16:25 DC Spark Test Result DESCOEUDRES, Antoine
16:45 Discussion
16:55 Pulsed Heating Test Results LAURENT, Lisa
17:15 Discussion
17:20 Thermal Fatigue behavior versus Grain Orientation AICHELER, Markus
17:40 Discussion
17:45 Recent Results of JINR-IAP Experiment on RF Cavity Heating SEDYKH, Sergey
18:05 Discussion