

Thermomag-07
A CARE-HHH workshop on
Heat Generation and Transfer in Superconducting Magnet
19-21 November 2007
Paris

Introduction to the workshop

B. Baudouy
CEA/Saclay - Dapnia/SACM

Goals of Thermomag-07

- **Minimizing and evacuating heat for the next generation of superconducting magnets for high intensity particle accelerators**
 - IR magnet for the LHC luminosity upgrade
 - Fast cycled magnets for FAIR

- **Reviewing the present knowledge on heat transfer in superconducting magnets**
 - Cooling techniques (fluids and regimes)
 - Heat transfer mechanisms
 - Modeling of heat transfer from coils to cooling system
 - Heat transfer experiments

- **Identify a common set of thermal design criteria**

Monday, 19 November 2007

- **09:30 -> 14:00 Morning: Introduction and heat generation (J.M. Rifflet)**
 - 09:30 Welcome by Antoine DAËL (CEA)
 - 09:40 Introduction to the workshop by Bertrand BAUDOUY (CEA)
 - 09:50 Cryogenics for superconducting magnets by Luigi SERIO (CERN)
 - 10:30 Thermal design criteria for various cooling schemes by Rob VAN WEELDEREN (CERN)
- **11:10 Break**
 - 11:30 Beam induced losses by Elena WILDNER (CERN)
 - 12:00 Cable and magnet losses by Luca BOTTURA (CERN)
- **12:30 Lunch**
- **14:00 -> 18:00 Afternoon : Heat transfer (B. Baudouy)**
 - 14:00 Mechanisms of heat extraction through cable insulation by Bertrand BAUDOUY (CEA)
 - 14:30 Cable in conduit and thermal budget at Nuclotron by Alexandre KOVALENKO (JINR, Dubna)
 - 15:00 Nb₃Sn versus NbTi in He II by Davide TOMMASINI (CERN)
 - 15:30 Heat and mass transfer in superfluid helium through porous media by Hervé ALLAIN (CEA)
- **16:00 Break**
 - 16:30 Modeling of quench levels induced by steady state heat disposition by Dariusz BOCIAN (CERN)
 - 17:00 Modeling of cable stability margin for transient perturbations by Pier Paolo GRANIERI
- **17:30 Discussion**

Tuesday, 20 November 2007

- **09:00 -> 14:00 Morning : experimental results (R. van Weelderen)**
 - 09:00 Transient Thermohydraulics measurement in cooling channels for the Iseult magnet by Philippe BREDY (*CEA Saclay*)
 - 09:30 Design criteria for cable in conduit conductions in relation with expected disturbances by Jean-Luc DUCHATEAU (*CEA*)
 - 10:00 First results of experiments at WUT by Maciej CHOROWSKI (*WUT*)
 - 10:30 Experience at CEA (30') Jaroslaw POLINSKI (*CEA Saclay*)
 - 11:00 Break
 - 11:15 Experience at CERN by David RICHTER (*CERN*)
 - 11:45 Experience at KEK (30') Nobuhiro KIMURA (*KEK*)
 - 12:15 Diversity of heat transfer requirements for FAIR magnet applications by Marion KAUSCHE (*GSF*)
- 12:45 Lunch
- **14:00 -> 18:30 Afternoon : round table & closeout**
 - 14:00 Round table (1h30') Andrzej SIEMKO (*CERN*)
 - 15:30 Break
 - 16:00 Close out (30') Davide TOMMASINI (*CERN*)
- 19:30 Dinner at L'A.O.C., 14 rue des Fossés St Bernard - Paris

Tuesday, 20 November 2007

- 7.30 pm Dinner @ AOC 14 rue des Fossés Saint Bernard



- Bus departure in front of AOC restaurant! (21st of November)

Wednesday, 21 November 2007

□ CEA Saclay's Visit

8:00 Bus departure (in front of AOC restaurant)

09:30->12:00 Visit of the SACM @ CEA Saclay

Iseult facility with Pierre Védrine

W7X test facility With Laurent Génini

R&D Lab with Jean Marc Gheller and Bertrand Baudouy

Lunch at Saclay