III international Workshop on Numerical Modelling of High Temperature Superconductors

Program CosmoCaixa

April 10th

18:00-21:00 Welcome and registration, Technical staff for presentations

April 11th

09:00 Opening

09:30- 11:00 "50 years of Critical State" memorial session, Auditori Hall
Chair: A. Campbell
T. Johansen "The critical-state seen by magneto-optical imaging"
L. Prigozhin "Electric Field Formulation for Thin Film Magnetization Problems"
A. Sánchez "50 years of critical-state: a historical view"

11:00- 11:30 Cofee Break

11:30-13:30 Critical State session , Auditori Hall
Chair: A. Morandi, A. Stenvall

Carlos López. "Electromagnetics close beyond the critical state: thermodynamic prospect"
V. Sokolovsky "AC losses in thin coated conductors under non-sinusoidal conditions"
E. Pardo "Fast simulation method for optimisation of real-size superconducting windings"
S. Farinon "Applicability of the adaptive resistivity method to describe the critical state of complex superconducting systems"
C. Navau "Modelling the control of magnetic fields with superconductor-metamaterial hybrids systems"

13:30- 15:00 Lunch & networking and Museum visit

15:00-16:30 Finite Elements I , Auditori Hall
Chair: E. Pardo , A. Badía
A. Campbell "Simulation studies on the magnetisation of (RE)BCO bulk superconductors using various split-coil arrangements"
A. Stenvall "Modelling self-field hysteresis losses of helicoidal structures in two dimensions with finite element method"
V. Lathinen "Eddy-Current Formulations for Superconductor Hysteresis Loss Modelling
V. Zermeño" 3D simulation of Roebel cables"

16:30-17:00 Cofee Break

17:00-18:45 Finite Elements II , Auditori Hall

Chair: F.Gömöry, S. Farinon

T. Coombs “Flux pumping, fluctuations and forces”
P. Vanderbemden “Magnetic shielding properties of a cut superconducting hollow cylinder : modelling and experiment”
M. Stepien “Transient state modeling in HTS using ANSYS APDL”
S. Mezani “Frequency Domain Computation of Eddy Currents in Superconductors”
M. Zahn “New progress of finite element modeling for 2G HTS coils”
E. Díez “Simplified local model for the mechanical interaction between a finite magnet and a superconductor in the Meissner state”

April 12th

09:00-10:45 Devices session , Àgora Hall
Chair: T. Coombs, V. Sokolovsky

D. Collangelo ” Inhomogeneity Effects in HTS Coated Conductors Used as Resistive FCLs in Medium Voltage Level Grid”
A. Álvarez “SIMULINK model of free-stabilized, externally-shunted 2G superconducting tapes for SFCL applications”
C. Boffo “Design optimization and prototype fabrication of HTS magnets”
W. Li “Finite element models for quench behavior of YBCO coated conductors”
L. Graber “Designing a Shielded-Core Superconducting Fault Current Limiter using Finite Element Analysis”

10:45-11:15 Cofee Break

11:15-13:00 Methods Improvement session, Àgora Hall
Chair: F. Sirois, C. Navau

F. Gömöry “Electromagnetic energy flow and dissipation in superconducting coils”
A. Morandi “A novel integral approach to the 2D modeling of superconductors by means of the bounded E-J power law”
A. Badel “Hybrid model of quench propagation in Coated Conductors”
J. Pina “A Matlab tool for the determination of current densities in HTS multiseed bulk samples based on sand pile model and genetic algorithms”
S. Nemdili “A simulation model of Superconducting Fault Current Limiter”

13:00- 14:30 Lunch & networking and Museum visit

14:30- 16:00 Other Methods session, Àgora Hall
Chair: P. Vanderbemden , B. Dutois

“A. Morandi “The straight approximation of the current loop: equivalence between 2D models of superconductor with axial translational symmetry”
J. Amorós “Modelling and current distribution computation in HTS samples”

K. Berger "Analytical Modeling of Bulk Superconductor in a Coil"
K. Klimenko "Electrodinamics of isotropic superconductors"

16:00- 16:30 Cofee Break

16:30- 18:00 Posters session
Chair: B. Vanderheyden, N. del Valle

J. Pérez-Díaz " Experimental determination of the first penetration field in high-temperature superconductors by mechanical methods"
S. Nemdili "High Temperature Superconductor Fault Current Limiter Operating Principle and Results"
S. Agramunt-Puig "Modelling Superconductor and Ideal Soft Ferromagnet Hybrids: Application to Levitation"
G. Via "Response of thin superconducting plates to an externally applied magnetic field
A. Álvarez " FEM estimation of the magnetic field in a screened ferromagnetic core for a Resistive-Inductive SFCL"
B. Grezsik "Modeling of quench in 2G tape using 2D ANSYS model"
S. Kirsch "AC losses of an infinitely long superconductor cylinder surrounded by a metallic sheath"
V. Zermeño "Transient response of HTS generator"
V. Zermeño "A homogenization technique to calculate AC losses in HTS stacks"
G. del Rosario " Electrical-thermal coupled model of second generation HTS cables for application in power system simulations"

April 13th

09:00-11:00 Parallel Discussion Meetings, Àgora, Alfa & Beta Halls

Topics Industrial requirements, Method improvements, Fundamental problems (can be changed during the Workshop)

11:00-11:30 Cofee Break

11:30- 13:00 Discussion Summaries, Àgora Hall

13:00-14:30 Lunch

14:30-16:30 Workshop Summary & General comments, Àgora Hall

Next workshop
Steering Comitee report
Concluding remarks
Closing