

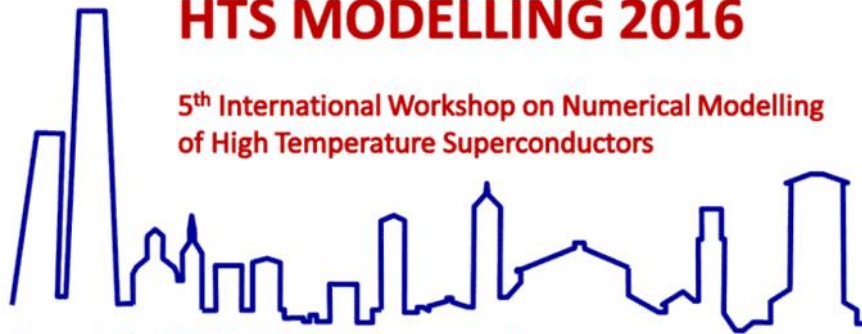
3D Modelling session

Wednesday, June 15th

Chairs: Leonid Prigozhin and Kévin Berger

HTS MODELLING 2016

5th International Workshop on Numerical Modelling
of High Temperature Superconductors



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<https://events.unibo.it/htsmodelling2016>

Highlights

- ▶ Some of the formulations H , T - A , T - Φ , A - V are more dedicated to specific problems:
 - ▶ With circuit-coupling, applied magnetic fields, thin films...
- ▶ Mixed BEM-FEM iterative methods can be used to reduce the FEM computation domain and perform faster computation of eddy currents in HTS material
- ▶ Variational principle still applied for magnetic substrates
- ▶ Magnetic properties of the substrate may need to be taken into account for cables applications
 - ▶ Maybe not necessary for high field applications, except for homogenization problems
- ▶ Electro-mechanical-thermal modelling is required for high magnetic field applications
 - ▶ e.g. TSTC Cable and CICC for fusion

Perspectives

- ▶ Need to continue efforts to share benchmark problems to show which formulation is more adapted to which problem
 - ▶ e.g. Cube with $E(J)$ power law...
- ▶ Real need to speed up the simulations
- ▶ Mixed FEM-BEM work will be performed to make it more general and has to be validate in 2D and 3D
- ▶ Sharing the magnetic properties of substrates at several temperatures would be helpful for people who aims to model their effects
- ▶ Percolation models are not well used but seem to correspond more to some physical aspects of the HTS in a long time range (relaxation, AC+DC sources...)