## 9th International Workshop on Numerical Modelling of High Temperature Superconductors - HTS 2024



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Type: Invited Oral

## Multi-physics modeling of metal-insulated REBCO magnets with screening currents

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The design of REBCO high temperature superconducting (HTS) ultra-high-field magnets requires fast and accurate multi-physics modelling (electromagnetic, thermal and mechanical). This contribution presents a novel computationally-efficient multi-physics method that takes screening currents into account. We apply this method to a REBCO insert within a 19 T / 150 mm bore low-temperature superconducting (LTS) magnet. We analyze the electro-thermal quench behavior, the thermal stress during quench, and the axial force on the LTS due to quench in the HTS insert. Results suggest that AC loss from screening currents speed-up electrothermal quench.

## Topic

Coupled and uncoupled multiphysics problems

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