On an optimal control problem for magnetic fields

Fredi Tröltzsch[1] Kristof Altmann[2] Serge Nicaise[3] Simon Stingelin[4]

An optimal control problem is considered for a coupled Maxwell integrodifferential model. The problem is related to an industrial application, where a time-optimal switching between magnetic fields of different polarization is needed. In the talk, the well-posedness of an associated system of degenerated parabolic integrodifferential equations, first-order necessary optimality conditions for the optimal control, and their numerical application are sketched. Numerical results are presented for a simplified 3D geometry.

[1] Technische Universität Berlin, Fakultät II, Institut für Mathematik, D-10623 Berlin, Germany, troeltzsch@math.tu-berlin.de

[2] TU Berlin, Institut für Mathematik, Str. des 17. Juni 136, Sekr. MA 4-5, D-10623 Berlin, altmann@math.tu-berlin.de

[3] Université de Valenciennes, 59313 Valenciennes Cedex 9, France, serge.nicaise@univ-valenciennes.fr

[4] Endress+Hauser Flowtec AG Reinach, Switzerland, stingelin@mac.com