

27th IFIP TC7 Conference 2015 on System Modelling and Optimization

Non-convex optimisation in the imaging sciences

**A proximal-type ADMM algorithm for convex optimisation problems with
nonlinear operator constraints**

Martin Benning

Institute of Mathematics and Image Computing, University of Lübeck

benning@mic.uni-luebeck.de

Abstract: We are presenting a modification of the well-known Alternating Direction Method of Multipliers (ADMM) algorithm with additional proximal-like iterations that aims at solving convex optimisation problems with nonlinear operator constraints. The algorithm is demonstrated to handle nonlinear inverse problem arising in velocity-encoded Magnetic Resonance Imaging (MRI) as well as in MRI corrected for susceptibility artefacts.