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Gradient method in Besov spaces for the optimal control of parabolic free boundary problems.

We pursue numerical analysis of the optimal control problem introduced recently as a variational formulation of the inverse Stefan problem in *U.G.Abdulla, Inverse Problems and Imaging, 7, 2(2013), 307-340 & 10, 4(2016), 869-898*. By employing Frechet differentiability result of the recent paper by *Abdulla et.al., Evolution Equations and Control Theory, 6, 3(2017), 319-344*, iterative numerical algorithm based on the projective gradient method in Besov spaces is implemented. We pursue sensitivity analysis with respect to initial guess, and comparison of alternative approaches of simultaneous reconstruction vs. nested optimization of the control vector components. Numerical results are demonstrated for model examples with various levels of complexity. (Received July 26, 2017)