

Convergence of space-time approximations for optimal control problems related to parabolic PDE's

Konstantinos Chrysafinos¹

We discuss discontinuous Galerkin finite element methods for optimal control problems related to semi-linear parabolic PDE's. The main objective is the minimization of the energy functional, using controls of distributed and Robin type. The approximation schemes under consideration are discontinuous in time but conforming in space. We present results regarding the convergence of discrete schemes of arbitrary order. The proposed technique is based on stability estimates at arbitrary time points under minimal regularity assumptions on the given data, and a discrete compactness argument for discontinuous Galerkin schemes.

¹ National Technical University of Athens, Mathematics, Zografou Campus, 15780 Athens, Greece, chrysafinos@math.ntua.gr