

# Convergence to steady-state of nonlinear distributed optimal control systems

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## Abstract

We are concerned with the long-run behavior of solutions to infinite horizon optimal control systems, where the state equation is given by a non-linear parabolic equation. The goal is to establish convergence to steady state of solutions of the optimal control problems under consideration. Our motivation to consider this problem is the study of agricultural economics models concerned with the optimal management of groundwater. The main object of study towards achieving this goal is the continuity of solutions of the state equation with respect to the initial condition and the non-homogeneous term. We establish this continuity by employing well-known norm estimates for linear parabolic equations.