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Piecewise optimal distributed controls for 2D Boussinesq equations. (English) Zbl 0951.35108
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The authors consider the velocity and temperature tracking problem for viscous incompressible thermally convected flows in two dimensions (which is similar to the velocity tracking problem for viscous incompressible flows). This problem is formulated as a piecewise (in time) distributed optimal control problem for the Boussinesq equations. The semidiscrete (in time) approximation of the piecewise optimal control problem is also studied. The main theorem asserts that the L^2 and H^1 norms of the difference between the controlled state and the desired state both decay to zero exponentially in time. A similar result is obtained for the semidiscrete approximation of the piecewise optimal control problem.

Reviewer: C.Popa (Iași)

MSC:

[35Q30](#) Navier-Stokes equations
[35B37](#) PDE in connection with control problems (MSC2000)
[35B40](#) Asymptotic behavior of solutions to PDEs
[49M25](#) Discrete approximations in optimal control

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Keywords:

velocity and temperature tracking problem for viscous incompressible thermally convected flows; Boussinesq equations; piecewise optimal control problem; semidiscrete approximation

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