Alvarez-Vázquez, Lino J.; **Fernández, Francisco J.**; **Muñoz-Sola, Rafael**
Analysis of a multistate control problem related to food technology. (English) ‖ Zbl 1147.49003 ‖
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Summary: This paper is concerned with an optimal control problem related to the determination of an optimal profile for the steam temperature into the autoclave along the processing of canned foods. The problem studies a system coupling the evolution Navier-Stokes equations with the heat transfer equation by natural convection (the so-called Boussinesq equations), and with the microorganisms removal equation. The essential difficulties in the study of this multistate control problem arise from the lack of uniqueness for the solution of the state system. Here we obtain – after a careful analysis of the mathematical formulation of the problem – the uniqueness of part of the state, and the existence of optimal solutions.

MSC:

49J20	Existence theories for optimal control problems involving partial differential equations	Cited in **9** Documents
35B37	PDE in connection with control problems (MSC2000)	
49N90	Applications of optimal control and differential games	

Keywords:

optimal control; multistate; uniqueness; existence; food technology

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