# OSCILLATION CRITERIA FOR
# SYSTEMS OF PARABOLIC EQUATIONS
# WITH FUNCTIONAL ARGUMENTS

WEI NIAN LI AND FAN WEI MENG

ABSTRACT. Sufficient conditions are established for the oscillations of systems of parabolic equations with functional arguments of the form

$$\frac{\partial}{\partial t} u_i(x,t) = a_i(t)\Delta u_i(x,t) + \sum_{k=1}^{m}\sum_{j=1}^{s} a_{ikj}(t)\Delta u_k(x,\rho_j(t))$$

$$- \sum_{k=1}^{m}\sum_{h=1}^{l} q_{ikh}(x,t)u_k(x,\sigma_h(t)),$$

$$(x,t) \in \Omega \times [0,\infty) \equiv G, \quad i = 1,2,\ldots,m,$$

under boundary conditions of Dirichlet and Neumann type, where $\Omega$ is a bounded domain in $R^n$ with a piecewise smooth boundary $\partial\Omega$, and $\Delta$ is the Laplacian in Euclidean $n$-space $R^n$. These results are illustrated by some examples.

**1. Introduction.** Recently, the oscillation theory for systems of partial functional differential equations has been studied extensively [3–7]. In this paper, we study the oscillation of systems of parabolic differential equations with functional arguments of the form

$$\frac{\partial}{\partial t} u_i(x,t) = a_i(t)\Delta u_i(x,t) + \sum_{k=1}^{m}\sum_{j=1}^{s} a_{ikj}(t)\Delta u_k(x,\rho_j(t))$$

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