# Problems of heat conduction in noncylindrical domains with special boundary conditions containing the time derivative

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**Abstract:** The paper researches pseudo - Volterra integral equations that arise in the study of the boundary value problem for the equation of heat conduction in a degenerating angular domain

$$(1)\quad \frac{\partial u(x,t)}{\partial t} - a^2\frac{\partial^2 u(x,t)}{\partial x^2} = g(x,t),\ \{x,t\}\in G=\{x,t:\ -t<x<t,\ t>0\};$$

$$(2)\qquad -\frac{\partial u(x,t)}{\partial x}\bigg|_{x=-t} + \frac{d\tilde{u}_1(t)}{dt} = h_1(t),\ \frac{\partial u(x,t)}{\partial x}\bigg|_{x=t} + \frac{d\tilde{u}_2(t)}{dt} = h_2(t),$$

where $\tilde{u}_1(t)=u(-t,t),\ \tilde{u}_2(t)=u(t,t)$. [1]

The peculiarity of problem (1) – (2) lies in the fact that both boundaries are mobile and the boundary conditions contain derivatives with respect to time. It is shown that the corresponding homogeneous integral equations in the class of essentially bounded functions have nonzero solutions.

The research and writing of this work was carried out a grant from the Ministry of Science and Education of the Republic of Kazakhstan (Grant No. AP05132262).

**Keywords:** pseudo - Volterra integral equation, equation of heat conduction, angular domain

**2010 Mathematics Subject Classification:** 35D05, 35K20, 45C05, 45D05

## References

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