

SIBERIAN BRANCH OF THE RUSSIAN ACADEMY OF SCIENCES
SOBOLEV INSTITUTE OF MATHEMATICS

SIBIRSKII ZHURNAL INDUSTRIAL'NOI MATEMATIKI

Published since 1998

4 issues per year

Vol. 25, No. 3(91)

Scientific journal

July–September, 2022

CONTENTS

Danilin A. R., Shaburov A. A. Asymptotic expansion of solution of one singularly perturbed optimal control problem with convex integral performance index and cheap control.....	5
Durdiev D. K., Merajova Sh. B. Inverse problem for an equation of mixed parabolic-hyperbolic type with a bessel operator	14
Ivanov V. V. An attracting limit cycle of an odd-dimensional circular gene network model	25
Imomnazarov B. Kh., Imomnazarov Sh. Kh., Mamatkulov M. M., Khudainazarov B. B. The fundamental solution of the equation in dissipative approximation for the stationary two-velocity hydrodynamics with phase equilibrium pressure.....	33
Kovalev M. D. On the geometric definition of the hinge mechanism, Kempe's theorem and overripe mathematics.....	41
Kulikov I. M., Chernykh I. G., Ulyanichev I. S., Tutukov A. V. Mathematical simulation of nuclear carbon burning in white dwarfs using a 7-isotope reaction network	55
Kuptsova E. V. Van der Pol oscillator under random noise	67
Lazareva G. G., Maksimova A. G. Numerical simulation of the propagation of tungsten vapor above a heated surface.....	81
Mamajonov M., Shermatova H. M. On a boundary value problem for a third-order parabolic-hyperbolic type equation in a triangular domain with three lines of type change.....	93
Minakov A. V., Lobasov A. S., Shebelev A. V., Zaicev D. V., Kabov O. A. Flow regimes of a liquid film carried away by a gas flow in a flat horizontal channel under isothermal conditions.....	104
Mitrofanov G. M., Karchevsky A. L. Mathematical modeling for thin-layered elastic media in seismic exploration	120
Pertsev N. V., Topchii V. A., Loginov K. K. Numerical stochastic modeling of dynamics of interacting populations	135
Romanov V. G., Bugueva T. V. The problem of determining the coefficient for a nonlinear term of a quasi-linear wave equation	154
Starovoitov V. N., Starovoitova B. N. Homogenization of a periodic elastic structure saturated with a Maxwell fluid	170

NOVOSIBIRSK
SOBOLEV INSTITUTE PRESS

The journal publishes the original papers and surveys of the topical problems of applied and industrial mathematics. The covered areas include:

- mathematical modeling;
- data analysis;
- artificial intelligence;
- development and analysis of computational algorithms;
- control theory;
- mathematical economics;
- differential equations;
- applied harmonic analysis

in mechanics, physics, engineering, chemistry, biology, ecology, medicine, etc.

EDITORIAL OFFICE ADDRESS:

SibJIM

Sobolev Institute of Mathematics SB RAS

pr. Akad. Koptiyuga 4

Novosibirsk 630090, Russia

Phone: +7 (383) 329-75-25

E-mail: sibjim@math.nsc.ru

© Siberian Branch of RAS, 2022

© Sobolev Institute of Mathematics SB RAS, 2022