

# **6th International Conference on Current Issues of Continuum Mechanics and Celestial Mechanics 2016 (CICMCM 2016)**

Journal of Physics: Conference Series Volume 919

Tomsk, Russia  
16 - 18 November 2016

**Editor:**

**Maxim Orlov**

ISBN: 978-1-5108-5362-1  
ISSN: 1742-6588

**Printed from e-media with permission by:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571



**Some format issues inherent in the e-media version may also appear in this print version.**

Copyright© (2016) by the Institute of Physics  
All rights reserved. The material featured in this book is subject to  
IOP copyright protection, unless otherwise indicated.

Printed by Curran Associates, Inc. (2018)

For permission requests, please contact the Institute of Physics  
at the address below.

Institute of Physics  
Dirac House, Temple Back  
Bristol BS1 6BE UK

Phone: 44 1 17 929 7481  
Fax: 44 1 17 920 0979

[techtracking@iop.org](mailto:techtracking@iop.org)

**Additional copies of this publication are available from:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571 USA  
Phone: 845-758-0400  
Fax: 845-758-2633  
Email: [curran@proceedings.com](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

# Table of contents

## Volume 919

**6th International Conference Current issues of continuum mechanics and celestial mechanics (6thCICMCM)**

**16–18 November 2016, Tomsk, Russian Federation**

**Accepted papers received: 27 October 2017**

**Published online: 1 December 2017**

### **Preface**

[6th International Conference Current issues of continuum mechanics and celestial mechanics \(6thCICMCM\)](#)

[Photograph](#)

[Committees](#)

[Sponsors](#)

[Peer review statement](#)

### **Plenary**

[Physical and mathematical modeling of pollutant emissions when burning peat](#)

A Vasilyev, V Lozhkin, D Tarkhov, O Lozhkina and V Timofeev.....1

[Experimental study of the penetrating of plates by projectile at low initial speeds](#)

M Yu Orlov, Yu N Orlova, Ig L Smakotin, V P Glazyrin and Yu N Orlov.....10

## **Invited**

### [Resistance of GPS samples to non-contact underwater explosion](#)

A I Dulnev and E A Nekliudova.....19

### [The study of the impact of ice conditions on the possibility of the submarine vessels surfacing in the ice cover](#)

V L Zemlyak, V M Kozin, N O Baurin, K I Ipatov and M V Kandelya.....31

### [On the theory of multi-pulse vibro-impact mechanisms](#)

L A Igumnov, V S Metrikin, I V Nikiforova and A A Ipatov.....46

## **Oral**

### [Research of the behavior of ice on water under explosive loads](#)

M Yu Orlov, Yu Orlova, G Bogomolov and V Glazyrin.....58

### [The efficiency of ceramic-faced metal targets at high-velocity impact](#)

V F Tolkachev, A A Konyaev and N V Pakhnutova.....65

### [Mathematical model and software for investigation of internal ballistic processes in high-speed projectile installations](#)

A S Diachkovskii, A I Zykova, A N Ishchenko, V Z Kasimov, K S Rogaev and A D Sidorov.....71

### [Determination of the propellant combustion law under ballistic experiment conditions](#)

A N Ishchenko, A S Diachkovskii, A I Zykova, V Z Kasimov and N M Samorokova.....82

[Determination of extra trajectory parameters of projectile layout motion](#)

A Ishchenko, V Burkin, V Faraponov, L Korolkov, E Maslov, A Diachkovskiy, A Chupashev and A Zyкова.....90

[Experimental studies of the physical process for forming the profile of a friction unit in a ballistic installation](#)

A V Guskov, M A Kormushkin and K E Milevskii.....95

[Detection of structural changes and mechanical properties of light alloys after severe plastic deformation](#)

V A Krasnoveikin, A A Kozulin and V A Skripnyak.....102

[Numerical modeling and prediction of mechanical properties of ceramic composite](#)

V A Mikushina, I Yu Smolin and Yu N Sidorenko.....108

[Numerical modeling of the strain of elastic rubber elements](#)

E N Moskvichev, A V Porokhin and I V Shcherbakov.....113

[Modelling stress-strain state in oxide ceramics under thermal shock](#)

V Promakhov, I Zhukov, Ya Dubkova, V Platov, N Grunt and N Shultz.....119

[Numerical Simulation of single-stage axial fan operation under dusty flow conditions](#)

L L Minkov and E V Pikushchak.....128

[Research of the rotation effect upon the hydrodynamics and heat and mass transport in a chemical reactor](#)

Natalia I Gicheva.....134

[Numerical simulation of filtration of mine water from coal slurry particles](#)

E N Dyachenko and N N Dyachenko.....141

[On improvement of the series convergence in the problem of the vibrations of orthotropic rectangular prism](#)

A D Lyashko.....147

[Permeability of nanonet structures constructed on the basis of carbon tubes](#)

M A Bubenchikov, T I Nikipelova, V B Tsyrenova and A S Chelnokova.....154

[The boundary element method applied to 3D magneto-electro-elastic dynamic problems](#)

L A Igumnov, I P Markov and Iu A Kuznetsov.....162

[The study of the effect of aluminum powders dispersion on the oxidation and kinetic characteristics](#)

T I Gorbenko, M V Gorbenko, M P Orlova and S A Volkov.....172

[Investigation of chaotic and regular dynamics of the asteroids – Venus companions](#)

T Yu Galushina and O N Letner.....178

[Problem of development high-precision local model of quasigeoid](#)

K V Shapovalova.....183

[Evaluation of influence of different perturbing accelerations on accuracy of probabilistic model of asteroid 2011 MD motion](#)

O M Syusina and G E Sambarov.....188