

# **Workshop on Materials and Engineering in Aeronautics (MEA2017)**

IOP Conference Series: Materials Science and Engineering  
Volume 312

Moscow, Russia  
15 - 16 November 2017

## **Editors:**

**Oleg N. Korsun  
Evgeny V. Nikulchev**

ISBN: 978-1-5108-5925-8  
ISSN: 1757-8981

**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© (2017) 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 312

**2017 Workshop on Materials and Engineering in Aeronautics (MEA2017)**

**15–16 November 2017, Moscow, Russian Federation**

**Accepted papers received: 1 February 2018**

**Published online: 1 March 2018**

### **Preface**

[2017 Workshop on Materials and Engineering in Aeronautics \(MEA2017\)](#)

[Peer review statement](#)

### **Papers**

[Instrumental Landing Using Audio Indication](#)

E A Burlak, A M Nabatchikov and O N Korsun.....1

[Adaptive fuzzy PID control for a quadrotor stabilisation](#)

N Cherrat, H Boubertakh and H Arioui.....6

[The approach to detection and application of the company's technological competences to form a business-model](#)

A A Chursin, A I Kashirin, V V Strenalyuk, A S Semenov, A A Ostrovskaya and T V Kokuytseva.....11

[Approach to the problem of the parameters optimization of the shooting system](#)

L A Demidova, O R Gazizova and N A Petrova.....17

[Approach to the problem of the parameters optimization of the shooting system](#)

L A Demidova, V A Sablina and Y S Sokolova.....27

[Adaptive neural network motion control for aircraft under uncertainty conditions](#)

A V Efremov, M S Tiaglik and Yu V Tiumentsev.....37

[Predictive display design for the vehicles with time delay in dynamic response](#)

A V Efremov, M S Tiaglik, I H Irgaleev and E V Efremov.....42

[Neural network identification of aircraft nonlinear aerodynamic characteristics](#)

M V Egorchev and Yu V Tiumentsev.....46

[Statics and buckling problems of aircraft structurally-anisotropic composite panels with the influence of production technology](#)

L M Gavva and A I Endogur.....51

[Nonparametric method for failures detection and localization in the actuating subsystem of aircraft control system](#)

S S Karpenko, E Yu Zybin and V V Kosyanchuk.....58

[Morphology and kinetics of the formation of polyamide benzimidazole in N-methylpyrrolidone](#)

O A Khanchich, V B Larionov and A L Biryukov.....63

[Technical diagnostics functioning machines and mechanisms](#)

M I Kiselev, V I Pronyakin and A K Tulekbaeva.....69

[Polymer film strain gauges for measuring large elongations](#)

A P Kondratov, A M Zueva, R S Varakin, I P Taranec and I A Savenkova.....73

[Optimal pattern synthesis for speech recognition based on principal component analysis](#)

O N Korsun and A V Poliyev.....77

[Aircraft aerodynamic coefficients identification using flight tests data](#)

O N Korsun, A V Stulovskii, O A Balyk and M V Zolotaeva.....82

[Isomorphic observers of the linear systems state](#)

V S Kulabukhov.....87

[Extreme trajectory approach to the problem of determining the degree of stability of a laser surface scanning system](#)

V N Nikitin and V B Chemodanov.....93

[Construction of multi-agent mobile robots control system in the problem of persecution with using a modified reinforcement learning method based on neural networks](#)

M L Patkin and G N Rogachev.....98

[Optimization of maintenance period for the elements of resource-supplying networks with branching structure](#)

A I Peschansky, G N Rogachev and A I Kovalenko.....103

[Method of optimization onboard communication network](#)

G A Platoshin, N I Selvesuk, M E Semenov and V M Novikov.....109

[Development of robotic mobile platform with the universal chassis system](#)

I Ryadchikov, E Nikulchev, S Sechenev, M Drobotenko, A Svidlov, P Volkodav and A Feshin.....114

[Airborne data measurement system errors reduction through state estimation and control optimization](#)

G G Sebryakov, S M Muzhichek, V I Pavlov, O V Ermolin and A A Skrinnikov.....118

[The heat storage material based on paraffin-modified multilayer carbon nanotubes with Nickel-zinc ferrite](#)

A Shchegolkov, A Shchegolkov, T Dyachkova and A Semenov.....123

[Methods and tools for profiling and control of distributed systems](#)

R Sukharev, O Lukyanchikov, E Nikulchev, D Biryukov and I Ryadchikov.....129

[Nonparametric method for failures diagnosis in the actuating subsystem of aircraft control system](#)

M N Terentev, S S Karpenko, E Yu Zybin and V V Kosyanchuk.....135