VII International Conference: Topical Problems of Continuum Mechanics (TPCM 2021)

Journal of Physics: Conference Series Volume 2231

Online 4 – 8 October 2021

ISBN: 978-1-7138-5487-6

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.

This work is licensed under a Creative Commons Attribution 3.0 International Licence. Licence details: http://creativecommons.org/licenses/by/3.0/.

No changes have been made to the content of these proceedings. There may be changes to pagination and minor adjustments for aesthetics.

Printed with permission by Curran Associates, Inc. (2023)

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

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 Web: www.proceedings.com

TABLE OF CONTENTS

VII International Conference on Topical Problems of Continuum Mechanics October 4-8, 2021, Tsaghkadzor, Armenia

Peer Review Statement

Exact and Approximate Solutions of the System of Interrelated Equations of the Theory of Creep and Long-Term Strength	1
Modelling and Investigation of the Stress State in a Finite Cylinder with a Circular Crack Under Sudden Torsional Loading	7
Mechanical Properties of Metal-matrix Composites Reinforced with Carbide Structures	15
System of Cracks Under the Impact of Plane Elastic Waves	20
Strength, Thermal Resistance and Electrical Conductivity of Aluminum-Based Composite Wire	27
A Model of Mechanics of Growing Solids for the Stress-Strain Analysis of Wound Composites Reinforced with Thin Unidirectional Fibers	34
The Evolution of Creep Curves of High Impact Polystyrene and Polyurethane Specimens After Aging	39
On the Wave Motion on the Surface of a Viscous Stratified Liquid	46
Influence of Metal Texture and Loading Rate on Heat Release Under Quasi-Static Tension	52
Mathematical Modeling of Temperature Stresses in a Nonlocal Thermoviscoelastic Continuous Medium	62
Examples of Exact Solutions to Boundary Value Problems of the Theory of Elasticity for a Truncated Wedge	67
Reinforcement of Polymer Composite Materials by Titanium Dioxide Nanoparticles Synthesized in Plasma Discharge Under Ultrasonic Cavitation	74
On the Influence of an Elastic Film to the Attenuation of Wave Motion Between Viscous and Moving Ideal Fluid	81

On a Pseudo-Periodicity in the Elastodynamics	90
The Dependence of the Deformation Behavior of Fiberglass Pipes on the Initial Disorientation of Reinforcement Subjected to Repeated-Static Internal Hydrostatic Pressure and Axial Tension	96
Inhomogeneous Transversely Isotropic Space Under Influence of Concentrated Power and Temperature Sources	106
Methods for Determining Shear Resistance by a System of Cracks and Old Slip Surfaces with the Purpose to Evaluate the Stability of Landslides	115
Investigation of Mechanical Properties and Fracture Surface of Cylindrical Specimens of Al 6101 Alloy Under Static Tension	120
On a System of Independent Arguments for Constitutive Tensor Functions on the Growing Surface in Micropolar Continuum	127
Quadrature Formulas for Cauchy-Type Integrals with the Cauchy Kernel to a Integer Power and a Jacobi Weight Function with Complex Exponents	134
Stress Analysis of Composites with Interfacial Bridged Cracks and Damaged Zones	141
Modeling of Self-Healing of Microcracks in the Process of Longitudinal Electroplastic Rolling	148
Finding Coefficients in the Problem of a Cylindrical Shell with a Circular Cutout	155
Contact Problem for a Piecewise-Homogeneous Plane with an Interfacial Crack Under Dry Friction VN Hakobyan, LV Hakobyan, LL Dashtoyan	163
Formation of a Hybrid of Electroacoustic Waves in Piezoelectric Layered Composites	170
Residual Stresses Calculation in a Thermoelastoplastic Torus After Cooling	181
Exact and Beam Solutions for a Narrow Clamped Rectangle	187
On the Influence of the Pipe Outer Coating Nonuniformity on the Contact Stresses Arising Under Rigid Bushes	192
Development of a Mathematical Model of a Force Actuator for the Opening of a Space Structure with Transformable Configuration	197

Supersonic Divergence of a Panel with a Free Edge Initially Loaded in Two Directions Tensile and	
Compressive Forces	204
S R Martirosvan	

Author Index