

# Contents

---

**Vol. 57, No. 2, 2014**

A simultaneous English language translation of this journal is available from Allerton Press, Inc.  
Distributed worldwide by Springer. *Russian Aeronautics (Iz. VUZ)*, ISSN 1068-7998.

---

## Flight Vehicle Design

Problems in Formation and Control of a Required Microacceleration Level at Spacecraft Design, Tests, and Operation

*A. I. Belousov and A.V. Sedel'nikov*

111

## Structural Mechanics and Strength of Flight Vehicles

Nonlinear Deformation and Stability of Discretely Reinforced Elliptical Cylindrical Shells under Transverse Bending and Internal Pressure

*L. P. Zheleznov, V. V. Kabanov, and D. V. Boiko*

118

Analysis of Stresses in a Cylindrical Shell under Transverse Local Loading

*B. V. Nerubailo*

127

---

## Flight Dynamics and Control of Flight Vehicles

Aircraft Lateral-Directional Control without a Roll Command in the Autopilot

*L. G. Romanenko, G. G. Samarova, and A. G. Romanenko*

134

---

## Aero- and Gas-Dynamics of Flight Vehicles and Their Engines

Analysis of a Coaxial Gas Ejector

*V. A. Sychenkov, V. I. Panchenko, and R. R. Khaliulin*

141

---

## Aircraft and Rocket Engine Design and Development

Promising Lines in Investigating the Dynamic Characteristics of GTE Rotor Elastodamping Supports

*I. S. Barmanov*

148

To Simulation of Fan Blade Out for a High Bypass Ratio Engine

*M. K. Leont'ev, A.V. Davydov, S. A. Degtyarev, and I. L. Gladkii*

154

---

## Aircraft Instruments and Instrumentation Computer Complexes

Information-Measuring and Control System of Unmanned Aerial Vehicles Based on High-Accuracy Micromechanical Sensitive Elements

*D. M. Malyutin and M. D. Malyutina*

162

---

## Automation of Design and Production of Aeronautical Equipment

Computer-Aided Design of Blank Forging Production Facilities for Aircraft Engine Compressor Blades

*I. N. Khaimovich*

169

---

# **Radio Engineering and Communications**

Post-Correlation Probabilistic Models in the Problem of Signal Discrimination  
for Modern Information and Communication Systems

*Sh. M. Chabdarov, A. F. Nadeev, and R. R. Faizullin*

175

---

## **TECHNICAL NOTES**

### **Aero- and Gas-Dynamics of Flight Vehicles and Their Engines**

Numerical Modeling of Flow Mixing and Cooling Processes in a Perforated Exhaust Duct

*A. V. Kozlova, V. Ya. Modorskii, Yu. V. Sokolkin, and A. N. Ponik*

181

On the Hypothesis of Adhesion

*K. B. Panfilovich*

187

---

### **Aircraft and Rocket Engine Design and Development**

Surface Protection by Shielding from a Hot Source under Conditions of Free Convection

*A. V. Gimbitskii, R. N. Gil'fanov, S. G. Dezider'ev, and A. G. Karimova*

189

A Synthetic Aviation Hydraulic Fluid of New Generation

*L. S. Yanovskii, V. M. Ezhov, A. A. Molokanov, R. M. Stepanova, K. V. Sharanina,  
and A. V. Kirsanov*

193

---

### **Aircraft and Rocket Engine Theory**

Certain Features of GTE Combustion Chamber Open-Type Nozzles

*S. V. Kotsyubinskii and Yu. A. Ravikovich*

198

---

### **Aircraft Production Technology**

A Technique of Shaping the Barrel-Type Parts

*E. G. Dem'yanenko*

204

---

### **Automation of Design and Production of Aeronautical Equipment**

Construction of a Mathematical Model to Calculate the Productive Resources under the Conditions of Limited Information

*I. Sh. Sharafeev, I. M. Zakirov, and I. V. Ermolenko*

212

---