

MEASUREMENT TECHNIQUES

A translation of *Izmeritel'naya Tekhnika and Metrologiya*

Volume 51, Number 6

June, 2008

CONTENTS

FUNDAMENTAL PROBLEMS IN METROLOGY

- The Likely Origin and Calculability of Physical Constants – A. F. Kotyuk and A. V. Khromov 567

GENERAL PROBLEMS OF METROLOGY

AND MEASUREMENT TECHNIQUE

- Effects of Random-Process Classification Characteristics on Measurement Processing Accuracy

– A. M. Prokhorenkov and N. M. Kachala 575

- A Method of Processing Measurements with Structurally Undefined Interference

– Yu. G. Bulychev, A. V. Eliseev, and A. P. Lapsar' 582

- A Two-Channel Circuit for Protecting a Resonant Gravitational Antenna from Correlated

Non-Gaussian Interference – A. V. Gusev 590

NANOMETROLOGY

- Linearity Measurement in an Atomic-Force Microscope – A. V. Rakov, Yu. A. Novikov,
and P. A. Todua 594

- Accuracy in Linear Dimensions Measurement in Scanning Electron Microscopes in

Microtechnology and Nanotechnology – Yu. A. Novikov, A. V. Rakov,
and P. A. Todua 599

- Calibrating a Scanning Electron Microscope in Two Coordinates by the Use of One Certified

Dimension – Ch. P. Volk, Yu. A. Novikov, A. V. Rakov, and P. A. Todua 605

LINEAR AND ANGULAR MEASUREMENTS

- The Vint Device for Thread Control – V. I. Mironchenko and A. V. Uvarov 609

- Measurement of Surface Roughness Profile by a Triangulation Method – V. N. Demkin
and V. A. Stepanov 614

TIME AND FREQUENCY MEASUREMENTS

- Estimating the Total Error for a Distributed Group Standard for Time and Frequency

– I. Yu. Blinov and A. S. Goncharov 618

MECHANICAL MEASUREMENTS

- Analysis of the Informativeness of Piezoelectric Pressure Transducers by Means of a
Generalized Performance Index – M. V. Bogush, E. A. Mokrov, and A. E. Panich 623

- An Experimental Investigation of the Error in Measurement of a Force by a Group of

Dynamometers Situated in Parallel – S. V. Brodyagin and E. V. Patokin 627

CONTENTS

(continued)

THERMAL MEASUREMENTS

The Use of an Explicit Method of Identifying Objects to Solve Problems of Nonstationary Heat Conduction – Yu. I. Azima	632
Determination of the Limit of Applicability of the Parabolic Equation of Heat Conduction – A. V. Kostanovskii and M. E. Kostanovskaya	642

RADIO MEASUREMENTS

The Identification of Objects in Active-Passive Radar Systems – O. E. Popova and S. N. Razin'kov	649
Features of the Procedure for Measuring the Amplitude Backscattering Diagrams of Very Large Objects Using Ground Radar Measuring Systems – V. V. Belyaev, D. L. Dobrynin, V. N. Myazin, and T. S. Uzhakhov	658
Radar Recording of the Concluding Stage of the Turning of the Rudder of a Sea-Going Ship – V. M. Dorozhko	662
Measurement of the Distribution of the Temperature Field of Materials in Microwave Resonators of Complex Shape – S. Yu. Shakhbazov, M. V. Nefedov, V. E. Nikishin, D. A. Loik, and A. O. Nikishev	671
A Method of Determining the Spatial Position of the Phase Center of Log-Periodic Antennas – A. P. Smirnov and K. S. Chernyaev	675

ACOUSTIC MEASUREMENTS

Detection of Gravity Wave Signals with Drift of the Geometric Dimensions of the Detector – V. I. Voronov, S. F. Levin, Z. G. Murzakhanov, B. P. Pavlov, A. F. Skochilov, and F. Kh. Tazyukov	678
--	-----

IONIZING RADIATION MEASUREMENTS

Effect of Weak Magnetic Field Changes on the Sensitivity of Ultrapure Germanium γ -Detectors – Yu. D. Bayukov, A. V. Davydov, and M. M. Korotkov	683
---	-----

MEDICAL AND BIOLOGICAL MEASUREMENTS

Biosensor Systems – a Modern Approach to the Construction of Highly-Sensitive Means and Methods for Environmental Monitoring – D. N. Zhdanov and P. I. Gos'kov	687
--	-----

PHYSICOCHEMICAL MEASUREMENTS

Increased Sensitivity and Selective Capacity of Gas Sensors Based on SnO_{2-x} Films Exposed to Light-Emitting Diodes – A. M. Gulyaev, Le Van Van, O. B. Sarach, and O. B. Mukhina	694
---	-----