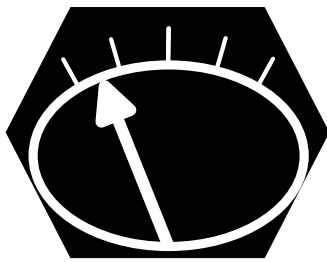


***DAYS OF THE SCIENCE of the Technical University of Sofia
SOZOPOL 2018***

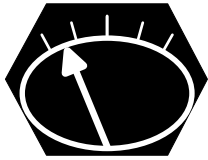
28th INTERNATIONAL SCIENTIFIC SYMPOSIUM



**METROLOGY AND
METROLOGY
ASSURANCE 2018**

PROGRAMME

September 10 – 14, 2018, Sozopol, Bulgaria



METROLOGY AND METROLOGY ASSURANCE 2018

28th International Scientific Symposium
September 10 -14, 2018, Sozopol, Bulgaria.

ORGANISED BY



Technical University of Sofia

- ◆ *Department of Electrical Measurements*
- ◆ *Department of Precision Engineering and Measuring Instruments*



Bulgarian Institute of Metrology



Union of Metrologists in Bulgaria



Bulgarian Academical Association of Metrology



Kozloduy Nuclear Power Plant

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PROGRAMME

REGISTRATION		10.09.2018	10:00 – 19:30
		11.09.2018	09:00 – 12:00
OPENING	Hall 1	11.09.2018	10:00 – 11:00
PAPERS AND SCIENCE NOTES	Hall 1	11.09.2018	11:00 – 13:00
	Hall 1 & 2	11.09.2018	16:00 – 18:00
	Hall 1 & 2	12.09.2018	09:00 – 11:00
	Hall 1 & 2	12.09.2018	11:15 – 13:15
	Hall 1 & 2	12.09.2018	16:00 – 18:00
	Hall 1 & 2	13.09.2018	09:00 – 11:30
ROUND TABLE	Hall 1	12.09.2018	13:30 – 14:30
WELCOME		11.09.2018	19:00
COCKTAIL		12.09.2018	19:30
CLOSING	Hall 1	13.09.2018	11:30

10 September 2018 (Monday)		
10:00 – 19:30	Registration	
11 September 2018 (Tuesday)		
09:00 – 12:00	Registration	
	Hall 1	
10:00 – 11:00	Opening	
11:00 – 13:00	Plenary Session	
13:00 – 16:00	Lunch and Free time	
	Hall 1	Hall 2
16:00 – 18:00	Section V: Measurements in the Electrical Power Engineering	Section VI: Acoustics Measurements, Vibration Measurements and Diagnostics
19:00	Welcome	
12 September 2018 (Wednesday)		
	Hall 1	Hall 2
09:00 – 11:00	Section I: General Aspects of Metrology. Measurement Methods Unity and Accuracy of Measurements	Section VII: Measurements in the Ecology, Biotechnology, Medicine and Sport
11:00 – 11:15	Coffee break	
11:15 – 13:15	Section I: CONTINUES	Section VIII: Measurements in Humanities
13:30 – 14:30	Round Table: Scope of the Metrology Increases – Where the Limits Are?	
13:15 – 16:00	Lunch and Free time	
	Hall 1	Hall 2
16:00 – 18:00	Section IX: Quality Management and Control, Standardization and Certification	Section III: Measurement and Information Systems and Technologies
19:30	Cocktail	
13 September 2018 (Thursday)		
	Hall 1	Hall 2
09:00 – 11:30	Section II: Sensors, Transducers and Devices for Measurement of Physical Quantities	Section IV: Measurements in the Industry
11:30	Closing of the Symposium	
14 September 2018 (Friday)		
Departure		

SCIENTIFIC PROGRAMME
of 28th International Scientific Symposium
METROLOGY AND METROLOGY ASSURANCE 2018

11 September 2018, Tuesday

PLENARY SESSION

11:00 – 13:00 ▶ Hall 1

Chairman: Assoc. Prof. I. Kodjabashev, PhD

Secretary: Assoc. Prof. G. Milushev, PhD

P.1.	<i>S. T. Nedialkov, N. A. Alexandrov THE NEW DEFINITIONS OF THE BASE UNITS OF THE SI SYSTEM AND THEIR REALIZATION</i>
P.2.	<i>R. Taymanov, K. Sapozhnikova, A. Mukhin, V. Ignatiev INDUSTRY 4.0 AND INTERNET OF THINGS: TO BE OR NOT TO BE? THAT IS THE QUESTION TO METROLOGY</i>
P.3.	<i>G. Dukendjiev 50 YEAR DEPARTMENT OF PRECISION ENGINEERING AND MEASUREMENT INSTRUMENTS</i>

Section V

MEASUREMENTS IN THE ELECTRICAL POWER ENGINEERING

16:00 – 18:00 ▶ Hall 1

Chairman: Assoc. Prof. G. Milushev, PhD

Secretary: Assist. Prof. K. Galabov, MEng

V.1.	<i>A. N. Serov, A. A. Shatokhin, N. A. Serov, G. V. Antipov A SAMPLE RATE CONVERTER FOR MEASURING INSTRUMENTS OF POWER QUALITY INDICATORS</i>
V.2.	<i>P. M. Tzvetkov, K. S. Galabov, I. N. Kodjabashev SOME FEATURES AND OPPORTUNITIES FOR CALIBRATION OF ANALYZERS OF ELECTRIC POWER BY HARMONICS</i>
V.3.	<i>A.A. Akhmeev, E.V. Voronskaya METROLOGICAL SUPPORT OF HIGH CURRENT MEASUREMENTS IN THE RUSSIAN FEDERATION</i>
V.4.	<i>M. S. Dimitrov MECHANICAL VALIDATION OF HV ELECTRICAL WIRES CONNECTION FOR ELECTRICAL VEHICLE OBTAINED THROUGH ULTRASONICALLY WELDED HV WIRES</i>
V.5.	<i>G. S. Milushev, K. S. Kirilova-Blagoeva, ACCREDITED TESTING OF ENERGY CONSUMPTION OF ELECTRICAL VEHICLES ACCORDING TO E-SORT PROTOCOL</i>
V.6.	<i>G. S. Milushev, USABLE ENERGY OF ELECTRICAL VEHICLES AND CHARGING STATION EFFICIENCY ACCORDING TO E-SORT PROTOCOL</i>

Section VI

ACOUSTICS MEASUREMENTS, VIBRATION MEASUREMENTS AND DIAGNOSTICS

16:00 – 18:00 ▶ Hall 2

Chairman: M. Djambazov, PhD

Secretary: Assist. Prof. B. Djudjev, PhD

VI.1.	<i>V.V. Usik THE HARDWARE-SOFTWARE COMPLEX FOR MEASURING SOUND FIELD CHARACTERISTICS IN A ROOM AT THE FINAL STAGE OF THE ACOUSTIC EXAMINATION</i>
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VI.2.	<i>B. B. Mihaylov</i> EVOLUTION AND EXTENSION OF SPECTRI'S OWN SOLUTION FOR MEASUREMENT, MONITORING AND REAL TIME DISPLAY OF ENVIRONMENTAL PARAMETERS (NOISE, VIBRATION, DUST, METEO DATA, OTHER) -WEBNOISE.EU.
VI.3.	<i>B. B. Mihaylov</i> INNOVATIONS IN THE FIELD OF NOISE AND VIBRATIONS FROM SPECTRI LTD
VI.4.	<i>B. B. Mihaylov</i> METROLOGICAL ASSURANCE, CONFIGURATION AND LAUNCH OF A NEW SPECTRI TECHNICAL FIELD – “SPECTRI-LAB” CALIBRATION LABORATORY FOR NOISE METERS, CALIBRATORS AND NOISE DOSIMETERS. ESTABLISHING ITS OWN METHODOLOGIES AND APPLYING THE RELEVANT INTERNATIONAL STANDARDS
VI.5.	<i>B. B. Mihaylov, M. T. Djambazov</i> IMPLEMENTATION OF THE REQUIREMENTS FOR ACCREDITATION OF THE EXECUTIVE AGENCY “BULGARIAN ACCREDITATION SERVICES” AND THE REQUIREMENTS OF THE STANDARD ISO / IEC 17020: 2012 TO “SPECTRI - MEASUREMENT” CONTROL AUTHORITY WITH SPECTRI LTD

12 September 2018, Wednesday

Section I

09:00 – 11:00 ▶ Hall 1

11:15 – 13:15 ▶ Hall 1

**GENERAL ASPECTS OF METROLOGY.
MEASUREMENT METHODS. UNITY AND ACCURACY
OF MEASUREMENTS**

Chairman: Part 1 S. Nedialkov, MEng;

Part 2 V. Konstantinova, PhD

Secretary: Assist. Prof. N. Gourov, MEng

I.1.	<i>A. Chunovkina</i> MODELS OF MEASUREMENT UNCERTAINTY OPTIMIZATION IN DECISION-MAKING ON THE BASIS OF MEASUREMENT RESULTS.
I.2.	<i>I. P. Zakharov, O. A. Botsiura</i> MEASUREMENT UNCERTAINTY EVALUATION IN NONLINEAR MODEL EQUATIONS
I.3.	<i>S. Shevkun, O. Velychko, M. Surdu, M. Dobroliubova</i> ESTIMATION OF UNCERTAINTY IN CALIBRATION OF INDUCTANCE MEASURES BY USING THE STATE PRIMARY STANDARDS OF THE UNITS OF ELECTRICAL CAPACITANCE, INDUCTANCE AND DISSIPATION FACTOR
I.4.	<i>V Davydov, V Zmiivska, T Shypova, D Lysytsia</i> ANALYSIS OF FRACTAL NOISE INDICATORS IN MEASURING SYSTEMS OF TECHNICAL OBJECTS
I.5.	<i>V.A. Babin, N.A. Kulikov, V.V. Petronevich, A.I. Samoylenko</i> THE RESEARCH OF UNCERTAINTY OF THE AIRFLOW VELOCITY UNIT TRANSFER IN THE RANGE FROM 0.05 TO 60 M/S
I.6.	<i>E. Logvinyuk,</i> CURRENT STATUS OF VNIIM STANDARD OF UNIT IN THE FIELD OF GEOMETRIC MEASUREMENTS
I.7.	<i>Y. Kuzmenko, S. Pronenko, D. Sabatovych</i> NEW METROLOGICAL LEGISLATION IN UKRAINE: GENERAL FEATURES AND IMPLEMENTATION PRINCIPALS
I.8.	<i>M. A. Miroshnyk, Y. N. Salfetnikova, O. B. Zaichenko, N. Y. Zaichenko, Y. V. Pakhomov, A. N. Miroschnyk</i> MICROWAVE MULTIPOINT MULTIMETER SENSOR MUTUAL REFLECTION AND ITS INFLUENCE ON SIGNAL AND TRACT PARAMETER MEASUREMENT ACCURACY
I.9.	<i>H. N. Nikolova, D. I. Diakov, V. A. Vassilev</i> FORM DEVIATIONS MEASUREMENT OF PLANAR SURFACES BY OVERLAPPING MEASURING POSITIONS USING REFERENCE PLANE METHOD

I.10.	<i>G. D. Blaskova ENSURING METROLOGICAL TRACEABILITY FOR MEASUREMENTS OF REFRACTIVE INDEX</i>
I.11.	<i>N. K. Pagelska, S. E. Mitrev, P. L. Vassileva PARTICIPATION IN A NATIONAL INTERLABORATORY COMPARISON IN THE FIELD OF MASS MEASUREMENT, BIM-MM-M-2017-02</i>
I.12.	<i>I. P. Ivanov, T. P. Petkova, L. H. Hristov CALIBRATION OF PRESSURE GAUGES BY MEANS OF A DIGITAL PRESSURE GAUGE</i>

Section VII

MEASUREMENTS IN THE ECOLOGY, BIOTECHNOLOGY, MEDICINE, AND SPORT

Chairman: Prof. V. Bachev, DSc

Secretary: Assoc. Prof. O. Groshev, PhD

09:00 – 11:00 ► Hall 2

VII.1.	<i>V.V. Golyan, N.V. Golyan, K.R. Galchenko, O.V. Kalinichenko MODERN TECHNOLOGIES FOR DETERMINATION OF PRECIPITATION IN THE RAINIEST COUNTRIES OF THE WORLD</i>
VII.2.	<i>V. G. Ivanova, B. L. Koleva, A. R. Surleva DETERMINATION OF POLLUTANTS IN HIGH MOUNTAIN LAKES BY ION CHROMATOGRAPHY AND INDUCTIVELY COUPLED PLASMA MASS SPECTROMETRY</i>
VII.3.	<i>O. H. Groshev, V. S. Bachev, P. S. Yordanov, B. R. Zlatev METHODOLOGY AND RESULTS CONNECTED TO THE SPORTS TECHNIQUE IN SHOT PUT</i>
VII.4.	<i>O.V. Derhunov, S.V. Shenhur EXPERIMENTAL HUMAN-INTERFACE DEVICE BASED ON INERTIAL AND MUSCLE ACTIVITY SENSORS</i>
VII.5.	<i>Y. E. Megel, I. I. Kalimanova, V. V. Shlyakhov, S. I. Kovalenko, A. V. Rybalka, S. N. Kovalenko A METHOD FOR DETERMINING THE PARAMETERS OF AN OPTICAL SYSTEM DURING THE SPATIAL SCANNING OF A BIOLOGICAL SOLUTION</i>
VII.6.	<i>A.G. Divin, S.V. Ponomarev, G.V. Shishkina, D.A. Lyubimova AN AUTOMATED SYSTEM FOR POTATO QUALITY CONTROL</i>
VII.7.	<i>Y. G. Karachiviev MODELING THE MEASUREMENT OF COAGULATION TIME AND CURD FIRING TIME OF GOAT MILK THROUGH ENZYMES WITH DIFFERENT CONCENTRATION</i>

Section VIII

MEASUREMENTS IN HUMANITIES

Chairman: R. Taymanov, DSc

Secretary: Assist. Prof. I. Blagov, PhD

11:15 – 13:15 ► Hall 2

VIII.1.	<i>V. I. Gladyshev THE NATURE OF LONELINESS: THE MEASUREMENT OF LONELINESS AND THE PROBLEM OF ITS COMPENSATION</i>
VIII.2.	<i>K. Sapozhnikova, S. Hussein, R. Taymanov, Iu. Baksheeva RECOGNITION OF EXPECTED LISTENERS' EMOTIONS BASED ON THE ARTIFICIAL INTELLIGENCE METHODS</i>
VIII.3.	<i>E. Levin MEASURING LIFE-CYCLES: VARIOUS RHYTHMS AND REFERENCE CLOCKS DETECTED IN A BIOGRAPHICAL CASE STUDY OF THE COMPOSER S. S. PROKOFIEV</i>
VIII.4.	<i>E. G. Prilukova METHODOLOGY OF SOCIAL COGNITION IN SEARCHING FOR METHODOLOGY</i>
VIII.5.	<i>O. Goncharenko, H. Kuchuk, N. Kuchuk, S. Smatkov QUALITATIVE MEASUREMENTS IN COMPLEX ORGANIZATIONAL SYSTEMS USING THE TECHNOLOGY OF OPEN DISTRIBUTED REGISTRIES</i>

VIII.6.	<i>E. V. Grednovskaya "ECOLOGY OF CONSCIOUSNESS" PROJECT AS A RESOURCE OF APPLICATION OF METROLOGICAL METHODOLOGY IN SOCIO-HUMANITARIAN KNOWLEDGE</i>
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ROUND TABLE

11:00 – 13:00 ▶ Hall 1

SCOPE OF THE METROLOGY INCREASES – WHERE THE LIMITS ARE?

Moderator: R. Taymanov, DSc

Section IX

16:00 – 18:00 ▶ Hall 1

QUALITY MANAGEMENT AND CONTROL, STANDARDIZATION AND CERTIFICATION

Chairman: Prof. G. Djukendjiev, PhD

Secretary: Assist. Prof. H. N. Nikolova, MEng

IX.1.	<i>N. D. Koshevoy, A. A. Belyaeva, T. G. Rozhnova OPTIMAL PLANNING METHODS FOR MEASUREMENTS IN LIMITED MATERIAL RESOURCES CONDITIONS</i>
IX.2.	<i>E. Volodarsky, L. Kosheva, M. Klevtsova FORMATION OF THE RULE DECISION-MAKING ABOUT SUITABILITY PRODUCTS ON THE BASIS OF THE ADAPTIVE ALGORITHM</i>
IX.3.	<i>Y. Y. Korolova, M. Miroshnyk TEST DIAGNOSTICS OF MULTIMEDIA DEVICES</i>
IX.4.	<i>S. D. Parvanov, V. M. Hristova, B. B. Sakakushev ACTUAL CONDITION AND PROBLEMS OF VISUAL METHODS FOR THE EVALUATION AND CONTROL OF PARAMETERS IN THE AUTOMOTIVE INDUSTRY</i>
IX.5.	<i>S.B. Malyk-Zamorij, S.N. Meshkov, R.P. Orel STATISTICAL APPROACH IN THERMAL TESTING OF THE MACHINES AND MECHANISMS TECHNICAL CONDITION</i>

Section III

16:00 – 18:00 ▶ Hall 2

MEASUREMENT AND INFORMATION SYSTEMS AND TECHNOLOGIES

Chairman: Prof. S. Semenov, DSc

Secretary: Assoc. Prof. S. Gavrylenko, PhD

III.1.	<i>Y.S. Bekhtin, A.A. Lupachev, P.K. Makarychev, N.A. Serov, V.S. Khodyreva, A.R. Petsinyarzh USING OSCILLATORY DYNAMICS OF THE MEASURING CIRCUIT IN THE INTERVAL CRITERION OF THE STEADY-STATE VALUE ESTIMATOR</i>
III.2.	<i>S. Y. Gavrylenko, V. V. Chelak, A. A. Gornostal DEVELOPMENT OF A HEURISTIC SCANNER FOR AN ANTIVIRUS PROGRAM ON THE BASIS OF THE MAMDANI FUZZY LOGIC METHOD</i>
III.3.	<i>S. Semenov, A. Semenova, R. Koval, M. Bartosh INFORMATIZATION AND SCALING OF TECHNOLOGY FOR SOFTWARE DEVELOPMENT WITH SECURITY REQUIREMENTS</i>
III.4.	<i>O.V. Derhunov, S.V. Shenhur EXPERIMENTAL EVALUATION OF DRONE PROPULSION SYSTEM CHARACTERISTICS</i>
III.5.	<i>N. S. Grancharova, R. P. Spirov STUDY OF DYNAMIC OBJECTS IN THERMAL IMAGES ON FPGA</i>
III.6.	<i>V.L. Lalev, K.I. Banev, B.I. Borisov, K.K. Bosilkov AUTOMATED CALIBRATION OF DIGITAL MULTIMETERS WITHOUT COMMUNICATION INTERFACE</i>

13 September 2018, Thursday

Section II

SENSORS, TRANSDUCERS AND DEVICES FOR MEASUREMENT OF PHYSICAL QUANTITIES

Chairman: Assoc. Prof. I. Kalimanova, PhD

Secretary: Assist. Prof. J. Afzali, MEng

09:00 – 11:30 ► Hall 1

II.1.	<i>I. V. Sadkovskaya, A. I. Eikhvald LASER INTERFEROMETRIC LIQUID MANOMETERS - THE BASIS OF THE STATE PRIMARY ABSOLUTE PRESSURE STANDARD OF RUSSIA</i>
II.2.	<i>A.S. Semenov, I.I. Fedosov A POSSIBILITY TO DECREASE THE FLOW MEASUREMENT ERROR IN A CORIOLIS FLOWMETER BY EVALUATING ADDITIONAL PARAMETERS OF A TWO-PHASE FLOW</i>
II.3.	<i>Y. E. Horoshajlo, G. M. Suchkov., S.A. Efimenko, R.Y. Umiarov, O.I. Domrin OPTOELECTRONIC METHODS OF REFLECTED SURFACES COLOR CONTROL</i>
II.4.	<i>A. A. Lavrukhin, V. G. Lysenko, P. V. Maslov, V. I. Semin, E. Iskenderzade, A. Shukufa METROLOGICAL SUPPLY OF MEASUREMENTS OF GEOMETRIC PARAMETERS OF THREADS OF OIL AND GAS SORTAMENT ON 6-AXIAL COORDINATE-MEASURING MACHINE WITH PARALLEL KINEMATICS</i>
II.5.	<i>V. Lysenko, V. Kupko, D. Novikov, A. Lavrukhin, A. Shukufa, E. Iskenderzade, THE MEMBERSHIP OF THE LENGTH UNITS IN THE FIELD OF MEASUREMENTS OF GEOMETRIC PARAMETERS OF DEVIATION FROM PLANE</i>
II.6.	<i>R. E. Hadzhistoykova, T. S. Konstantinova MEASUREMENTS FOR DC CHARACTERIZATION OF LOW RESISTANCE STANDARDS IN BIM</i>
II.7.	<i>R. E. Hadzhistoykova, V. Vassilev DEVELOPMENT OF COAXIAL RANGE RESISTORS FOR AC-DC VOLTAGE TRANSFER MEASUREMENTS</i>
II.8.	<i>B. P. Dzhudzhev, J. S. Afzali, RESEARCH AND DEVELOPMENT OF CAPACITIVE TRANSDUCER FOR MEASURING DISPLACEMENT OF BIMETALLIC STRIP</i>
II.9.	<i>T. A. Stefanova, A. S. Alexandrov MEASUREMENT OF A 10 GHZ GUN GENERATOR WITH A SPECTRUM-ANALYZER UP TO 6 GHZ</i>

Section IV

MEASUREMENTS IN THE INDUSTRY

Chairman: Assoc. Prof. B. Sakakushev, PhD

Secretary: M. Marinova, MEng

09:00 – 11:30 ► Hall 2

IV.1.	<i>G.G. Rannev, A.P. Tarasenko, V.M. Chernova SIMULATION MODEL FOR CALCULATING THE ERROR OF THE TEMPERATURE MEASURING CHANNEL</i>
IV.2.	<i>G.G. Rannev, S.V. Nefedov METHOD FOR DETERMINING THE MEASURING CURRENT FOR MEASURING THE THERMOELECTRIC EFFICIENCY OF PELTIER MODULES BY THE HARMAN METHOD</i>
IV.3.	<i>B. B. Sakakushev, M. L. Kokalarov, S.D. Parvanov PERSPECTIVES FOR THE APPLICATION OF THE PHOTOGRAPMETRIC METHOD FOR LARGE-SCALE DETAILS AND STRUCTURES.</i>
IV.4.	<i>A. Sinotin, S. Sotnik, K. Khrustalev, R. Allakhveranov, O. Chala, STUDY OF DEVICE'S MAXIMUM OVERHEAD DEPENDENCE FROM ITS SIZES AND INSTALLATION DENSITY</i>

IV.5.	<i>S.V. Ponomarev, E.V. Bulanov, V.O. Bulanova, A.G. Divin OPTIMIZATION OF THERMOPHYSICAL PROPERTIES OF INSULATION MATERIALS MEASURING BY THE METHOD OF IMPULSE FLAT HEAT SOURCE</i>
IV.6.	<i>A.A. Kuznetsov, A.A. Zaprudskiy, A.S. Bryukhova, K.I. Fomichenko CORROSION DIAGNOSTICS TECHNOLOGY IMPROVEMENT OF REINFORCED CONCRETE SUPPORTS OF THE RAILWAYS CATENARY SYSTEM</i>
IV.7.	<i>N. A. Naryadkina, V. A. Ryzhenkov MEASURING COMPLEX FOR IDENTIFICATION AND DETERMINATION OF CONCENTRATION OF SURFACE-ACTIVE SUBSTANCES</i>
IV.8.	<i>Z. Hr. Ivanova, N.S. Ivanova, P.L. Vassileva METROLOGY ASSURANCE OF CONTAMAT FHT 111 M AND MICROCONT II SURFACE CONTAMINATION MONITORS</i>
IV.9.	<i>I. G. Ilieva – Avramova, M. G. Marinova METHODOLOGY FOR CHECK OF DIGITAL FREQUENCY METERS</i>
IV.10.	<i>A. D. Etsov ARDUINO - BASED SYSTEM FOR MEASURING WEIGHT AND QUANTITY OF ITEMS (DIGITAL SCALE)</i>
IV.11.	<i>M. B. Baraharska, M. N. Stefanov INFORMATION – MEASUREMENT SIMULATION MODULE FOR AUTOMATED SYSTEM FOR PROCESSING, MIXING AND REGENERATING OF MOLDING MATERIAL IN METAL CASTING</i>

Important for authors!

The presentation of paper, saved on flash-memory shall be present to the secretary of the section not later than 15 min. before the beginning of the section work.