



11th Conference of the Society of Physicists of Macedonia 2016

September 22nd to 25th, Ohrid, Macedonia

Conference program

Thursday 22 September

CONFERENCE OPENING (12 h 00 min to 12 h 15 min) – Blagoja Veljanoski

Chairman: Olgica Kuzmanovska

Invited presentation

12 h 15 min to 13 h 00 min

ON TWO EXTREMELY FAST METHODS FOR THE SOLUTION OF THE NON-LTE LINE FORMATION PROBLEM

Olga Atanacković

Department of Astronomy, Faculty of Mathematics, University of Belgrade
Studentski trg 16, 11000 Belgrade, Serbia

Regular oral presentations

13 h 00 min to 13 h 30 min

CONSTACYCLIC AND QUANTUM CODES OVER A NON-CHAIN RING

Aysegul Bayram and Irfan Siap

Yildiz Technical University, Department of Mathematics Faculty of Art and Sciences, Davutpasa
Campus, Istanbul, 34220, Turkey

13 h 30 min to 14 h 00 min

EXTENSION OF THE RANGE OF PRIMARY VACUUM CALIBRATION METHODS WITH THE USE OF NONEVAPORABLE GETTERS

Sefer Avdiaj¹, Janez Šetina²

¹University of Prishtina, Mother Teresa av 3, Pristina 10000, Kosova

²Institute of Metals and Technology, Lepi pot 11, Ljubljana 1000, Slovenia

Education – parallel session

Chairman: Boce Mitreski

Invited presentations

12 h 00 min to 12 h 45 min

THE NATIONAL ASSESSMENT OF KNOWLEDGE OF PHYSICS IN SLOVENIA

Jurij Bajc

University of Ljubljana, Faculty of Education, Slovenia

12 h 45 min to 13 h 30 min

**INQUIRY APPROACH IN EDUCATION FOR SUSTAINABLE DEVELOPEMENT- A
ROLE OF PHYSICS TEACHERS**

S. Jokić¹ and Lj. Jokić²,

¹ The projects “Ruka u testu” and SUSTAIN, Vinča Institut of Nuclear Science, 11001 Belgrade, Serbia, ² A.K.M. Edukacija, 11070 Novi Beograd, Serbia

Regular oral presentations

13 h 30 min to 14 h 00 min

CONFORMITY IN PHYSICS

E. Hristovska, B. Mitrevski

Ss. Cyril and Methodius University of Skopje, Faculty of Natural Sciences and Mathematics,
Department of Physics, Arhimedova 3, 1000 Skopje, Republic of Macedonia

WELCOME RECEPTION AND LUNCH (14 h 00 min 16 h 00)

Chairman: Nenad Novkovski

Invited presentation

16 h 00 min to 16 h 45 min

DISCRETE OPTICAL VORTICES

Ljupco Hadzievski

Vinča Institute of Nuclear Sciences, University of Belgrade, 11001 Belgrade, Serbia

Regular oral presentations

16 h 45 min to 17 h 15 min

SOFT AND LIVING MATTER PHYSICS

Aleksandar Petrov

Institute of Solid State Physics, Bulgarian Academy of Sciences,
72 Tzarigradsko Chaussee Blvd., 1784 Sofia, Bulgaria

17 h 15 min to 17 h 45 min

**NEAR AND FAR FIELD DIFFRACTION OF A LAGUERRE-GAUSSIAN LASER BEAM
BY FORK-SHAPED GRATING**

S. Topuzoski and Lj. Janicijevic, Institute of Physics, Faculty of Natural Sciences and
Mathematics

Arhimedova 3, 1000 Skopje, R. Macedonia

17 h 45 min to 18 h 15 min

THE FBILI METHOD AND ITS VARIANTS

O. Kuzmanovska

Institute of Physics, Faculty of Natural Sciences and Mathematics, Ss Cyril and Methodius
University, Skopje, Macedonia

18 h 15 min to 18 h 45 min

PHOTOELECTROCHEMICAL CELLS BASED ON CDS FILMS

A. Tanusevski

Institute of Physics, Faculty of Natural Sciences and Mathematics, P. O. Box 162, 1000 Skopje,
Macedonia

Friday 23 September

Chairman: Atanas Tanuševski

Invited presentation

10 h 00 min to 10 h 45 min

HALF-METALS FERROMAGNETS: A MATERIALS PLATFORM FOR FUTURE SPINTRONICS DEVICES

V. K Lazarov¹

¹Department of Physics, The University of York, YO10 3DD, United Kingdom

Regular oral presentations

10 h 45 min to 11 h 15 min

GAMMA RADIATION SYNTHESIS OF POLYMERS AND CONTROL OF THE MECHANICAL PROPERTIES

N. Mahmudi¹ and S. Rendevski²

¹Faculty of Natural Sciences and Mathematics, State University of Tetovo, bul. Ilinden, b.b., 1200 Tetovo, Republic of Macedonia

²Faculty of Engineering and Technology, Department of Mathematics and Physics, Higher Colleges of Technology, Ras al Khaimah Men's Campus, United Arab Emirates

11 h 15 min to 11 h 45 min

STUDY OF MICROHARDNESS AND MICROSTRUCTURE OF NANOCRYSTALLINE AL ALLOY AA3004

Neset Izairi¹, Naim Sylaj³, Fadil Ajredini¹, Afërdita Vevecka-Priftaj², Mimoza Ristova⁴

¹Department of Physics, Faculty of Natural Sciences and Mathematics, State University of Tetovo, Tetovo, Republic of Macedonia

¹Department of Physics, Polytechnic University of Tirana, Sheshi "Nene Tereza", N.4, Tirana, Republic of Albania

³Department of Physics, Faculty of Natural Sciences and Mathematics, State University of Pristina, Republic of Kosovo,

⁴Department of Physics, Faculty of Natural Sciences and Mathematics, University "Ss Cyril and Methodius", Skopje, Republic of Macedonia

Education – parallel session

Chairman: Oliver Zajkov

Invited presentation

10 h 00 min to 10 h 45 min

USING ANALOGY IN DEVELOPING STUDENTS' CONCEPTUAL UNDERSTANDING OF ELECTRICAL PROPERTIES OF MATTER

Ivica Aviani

Institute of Physics, Bijenička c. 46, Hr-10002 Zagreb, Croatia and Faculty of Science, University of Split

Regular oral presentations

10 h 45 min to 11 h 15 min

PROJECT-BASED LEARNING AS AN APPROACH IN STUDENTS' UNDERSTANDING OF GRAPHS

B. Mitrevski¹, O. Zajkov¹ and S. Naumovska²

¹Institute of physics, Faculty of sciences and mathematics, Cyril and Methodius University, Arhimedova 3 1000 Skopje, Republic of Macedonia

² Secondary School Orce Nikolov, Ilinden 101, 1000 Skopje, Republic of Macedonia

11 h 15 min to 11 h 45 min

SCIENTIFIC CONCEPTS RELATED TO PHYSICS FROM THE PERSPECTIVE OF STUDENTS OF BIOLOGY

B. Radulović and M. Stojanović

University of Novi Sad, Faculty of Science, Department of Physics, Trg Dositeja Obradovića 4, 21000, Novi Sad, Republic of Serbia

Coffee break (11 h 45 min to 12 h 15 min)

Regular oral presentations

Chairman: Aneta Koseska

12 h 15 min to 12 h 45 min

APPLICATION OF X RAY DIFFRACTION AND SCANNING ELECTRON MICROSCOPY FOR CALCIUM SULFOALUMINATE AND CALCIUM SULFOALUMINATE - BELITE CEMENTS HYDRATION PROCESS

Ramadan Aliti¹, Thomas A. Bier², Mimoza Ristova¹, Bashkim Ziberi³, Elsa Qoku²

¹Institute of Physics, Faculty of Natural Sciences and Mathematics, Ss. Cyril and Methodius University, Arhimedova 3, 1000 Skopje, Macedonia

² Institut für Keramik, Glas- und Baustofftechnik der TU Bergakademie Freiberg, Agricolastr. 17 09599 Freiberg, Germany

³ Department of Physics – Faculty of Natural Sciences, State University of Tetovo, Ilindenska pn, 1200 Tetovo, Macedonia

12 h 45 min to 13 h 15 min

COMPLEX TWO-DIMENSIONAL PHOTOANODE ARCHITECTURE FOR EFFICIENT WATER SPLITTING

Mimoza M. Ristova^{1,2}, Kin. M. Yu^{1,3} and Wladislaw Walukiewicz¹

¹Solar Energy Materials Division, Lawrence Berkeley National Laboratory, 1 Cyclotron Road, B2, Berkeley, CA 94720, USA

²Institute of Physics, Faculty of Natural Sciences and Mathematics, Arhimedova 10, University in Skopje, 1000 Skopje, Republic of Macedonia

³Department of Physics and Materials Science, City University of Hong Kong, Hong Kong

13 h 15 min to 13 h 45 min

NORMALIZED INTEGRAL FOURIER TRANSFORM AMPLITUDE FOR FOOD QUALITY DETERMINATION BY ACOUSTIC IMPULSE RESPONSE METHOD

S. Rendeovski^{1*}, I. Aliu² and N. Mahmudi²

¹Faculty of Engineering and Technology, Department of Physics, Higher Colleges of Technology, Ras al Khaimah Men's Campus, United Arab Emirates

² Faculty of Natural Sciences and Mathematics, State University of Tetovo, bul. Ilinden, b.b., 1200 Tetovo, Republic of Macedonia

Education – parallel session

Chairman: Jurij Bajc

12 h 15 min to 12 h 45 min

**EFFECTS OF COMPUTER SOFTWARES IN QUANTUM PHYSICS CLASSROOM:
HOW THEY HELP STUDENTS**

B. Akarsu¹

¹Erciyes University, Faculty of Education, Kayseri, Turkey

12 h 45 min to 13 h 15 min

INFORMATION AND COMMUNICATION TECHNOLOGY AND TEACHING PHYSICS

S. Nikolic¹, Lj. Nesic² and A. Hrlec³

¹Elementary school “Milan Dj. Milicevic”, Borivoja Stevanovica, 19a, 11000 Belgrade, Serbia

²Faculty of Science and Mathematics, Visegradska 33, 18 000 Nis, Serbia

³High school Vrbovec, 7. svibnja 2, 10340 Vrbovec, Croatia

13 h 15 min to 13 h 45 min

**USE OF GRAPHS FOR DETERMINATION THE PHYSICS PROBLEMS
COMPLEXITY**

S. Manolev¹, S. Gegovska – Zajkova², O. Zajkov³

¹Secondary school “Goce Delcev”-Valandovo

²Faculty of Electrical Engineering and Information Technology, University of “Ss. Cyril and Methodius”, Skopje

³Faculty of Natural Sciences and Mathematics, University of “Ss. Kiril and Metodius”, Skopje

13 h 45 min to 14 h 15 min

**REAL AND VIRTUAL EXPERIMENTS FOR BETTER UNDERSTANDING ELECTRIC
CIRCUITS**

Fadil Ajredini¹, Neset Izairi¹, Oliver Zajkov²

¹Department of Physics, Faculty of Natural Sciences and Mathematics, University of Tetovo, Ilindenska bb, 1200 Tetovo, Republic of Macedonia

²Institute of Physics, Faculty of Natural Sciences and Mathematics, Ss. Cyril and Methodius University, Arhimewdova 3, 1000 Skopje, Republic of Macedonia

Lunch (14 h 00 min to 15 h 00 min)

Chairman: Irina Petreska

Invited presentations

15 h 00 min to 15 h 45 min

**SPATIALLY DISTRIBUTED NETWORK MOTIFS DETERMINE EGFR SIGNALING
RESPONSES**

Aneta Koseska¹

¹Max Planck Institute of Molecular Physiology, Otto-Hahn-Str. 1, 44202 Dortmund, Germany

15 h 45 min to 16 h 30 min

**CHARGE TRAPPING TYPE FLASH MEMORIES AND THE ROLE OF HIGH-K
DIELECTRICS**

A. Skeparovski¹, N. Novkovski¹, D. Spassov² and A. Paskaleva²

¹ Institute of Physics, Faculty of Natural Sciences and Mathematics, University “Ss. Cyril and Methodius”, Arhimedova 3, 1000 Skopje, Macedonia

² Institute of Solid State Physics, Bulgarian Academy of Sciences, Tzarigradsko Chaussee 72, Sofia 1784, Bulgaria

Regular oral presentations

16 h 30 min to 16 h 50 min

METHOD OF ABSOLUTE GRAVITY MEASUREMENT AND ITS INFLUENCE IN MASS DETERMINATION

Luljeta Disha¹, Defrim Bulku¹, Antoneta Deda²

¹ General Directorate of Metrology, Tirana, Albania

² Faculty of Natural Science, Tirana, Albania

16 h 50 min to 17 h 10 min

MOLECULAR DYNAMICS SIMULATION STUDY OF PROTEIN-PROTEIN INTERACTIONS

Redona Izairi¹ and Hiqmet Kamberaj²

¹ Department of Physics, State University of Tetovo, Tetovo, R. of Macedonia

² Department of Computer Engineering, International Balkan University, Skopje, Macedonia

Saturday 24 September

Chairman: Aleksandar Skeparovski

Invited presentation

10 h 00 min to 10 h 45 min

ELECTRONIC TRANSPORT IN SPINTRONIC DEVICES

Keith McKenna

Department of Physics, University of York, Heslington, York YO10 5DD, United Kingdom

Regular oral presentations

10 h 45 min to 11 h 15 min

DETERMINATION OF AN AGE OF A HUMAN FROM INCREMENTAL LINES IN CEMENTUM - THREE LEVEL LINES METHOD

M. Talevska^a, Z. Stojanovska^b, M. Mircevska^c and M. Ristova^a

^aInstitute of Physics, Faculty of Natural Sciences and Mathematics, Ss Cyril and Methodius University, Skopje, Arhimedova 3, 1000 Skopje, Republic of Macedonia

^bFaculty of Medical Sciences, University Goce Delcev, ul. Krste Misirkov 10-A, 2000 Stip, R. Macedonia

^cEuropean University, Bul. Kliment Ohridski 68, 1000 Skopje, Republic of Macedonia.

11 h 15 min to 11 h 45 min

HAWKING RADIATION FROM BLACK HOLES WITH TOPOLOGICAL DEFECTS AND GUP EFFECTS

K. Jusufi¹ and G. Apostolovska²

¹Physics Department, Faculty of Natural Sciences and Mathematics, State University of Tetovo, Ilinden Street nn, 1200, Macedonia

² Institute of Physics, Faculty of Natural Sciences and Mathematics, Ss. Cyril and Methodius University, Arhimedova 3, 1000 Skopje, Macedonia

Coffee break (11 h 45 min to 12 h 15 min)

12 h 15 min to 12 h 45 min

MICROSTATES IN SANDWICH NANO-STRUCTURES

Ana J. Šetrajčić – Tomić¹, Stevo K. Jaćimovski² and Jovan P. Šetrajčić³,

¹ University of Novi Sad, Faculty of Sciences, Department of Physics, Vojvodina – Serbia

² Academy of Criminalistic and Police Studies, Zemun – Belgrade, Serbia

³ University of Novi Sad, Faculty of Sciences, Department of Physics, Vojvodina – Serbia

12 h 45 min to 13 h 15 min

**ANALYSIS OF LOCAL DENSITY AREA FEATURE IN SIX FUJI AMULET S
MAMMOGRAPHY SYSTEMS**

V. Gershan¹

¹ Institute of Physics, Faculty of Natural Sciences and Mathematics, Arhimedova 3, 1000 Skopje, Republic of Macedonia

Lunch (13 h 15 min to 14 h 45 min)

Posters (14 h 45 min to 15 h 45 min)

Social program (15 h 45 min to 19 h 00 min)

Sunday 25 September

Chairman: Keith McKenna

Regular oral presentations

10 h 00 min to 10 h 30 min

COULOMB BLOCKADE DIAMONDS FOR π -CONJUGATED MOLECULAR WIRES

Irina Petreska^{1,2} and Gertrud Zwicknagl²

¹Institute of Physics, Faculty of Natural Sciences and Mathematics,

Ss. Cyril and Methodius University, P.O. Box 162, 1001 Skopje, Republic of Macedonia

²Institut für Mathematische Physik, Technische Universität Braunschweig,

Mendelsohnstrasse 3, 38106 Braunschweig, Germany

10 h 30 min to 11 h 00 min

**EXCITONIC SPECTRA IN DUAL HEXAGONAL - TRIGONAL DONOR-ACCEPTOR
LATTICES**

I.J. Lalov

Faculty of Physics, Sofia University, 1164 Sofia, Bulgaria

11 h 00 min to 11 h 30 min

**ELECTROMAGNETIC-ACOUSTIC TRANSFORMATION IN A MULTIBAND
ORGANIC CONDUCTORS DUE TO NERNST EFFECT**

D. Krstovska

Institute of Physics, Faculty of Natural Sciences and Mathematics, P. O. Box 162, 1000 Skopje, Macedonia

11 h 30 min to 11 h 50 min

**KINETIC MONTE CARLO SIMULATIONS OF GATE STACK DIELECTRIC
BREAKDOWN WITH TIME-DEPENDENT DEFECT GENERATION RATES**

B. Mitreska, H. Kochankovski and A. Skeparovski

Institute of Physics, Faculty of Natural Sciences and Mathematics, University “Ss. Cyril and Methodius”, Arhimedova 3, 1000 Skopje, Macedonia

11 h 50 min to 12 h 10 min

PARAMETRIC ANALYSIS OF THE ENERGETIC SPECTRUM OF AN ASYMMETRIC POTENTIAL

Dimitar Simonovski

Physics Institute, Faculty of Natural and Mathematical Sciences, Arhimedova 3, 1000 Skopje, Macedonia

List of posters

PLANET MERCURY GETS HIT BY A CORONAL MASS EJECTION: SIMULATION VS. MESSENGER DATA

W. Exner¹, U. Motschmann¹, D. Heyner¹, K.-H. Glassmeier¹, Daikou Shiota², Kanya Kusano², Takuya Shibayama²

¹Technical University of Braunschweig, Germany

²Institute for Space and Earth Environmental Research, Nagoya University, Japan

CONFORMITY IN PHYSICS

E. Hristovska, B. Mitrevski

Ss. Cyril and Methodius University of Skopje, Faculty of Natural Sciences and Mathematics, Department of Physics, Arhimedova 3, 1000 Skopje, Republic of Macedonia

THE EFFECT OF SOLUTION PRE-HISTORY ON CHIRALITY OF SODIUM CHLORATE CRYSTALS FROM AQUEOUS SOLUTIONS

Biljana Radiša, Mićo Mitrović, Branislava Misailović

University of Belgrade-Faculty of Physics, Studentski trg 12, 11000 Belgrade, Serbia

THERMAL STRESSES MODELING OF A STEEL BEAM

Naim Syla and Fisnik Aliaj

Department of Physics, Faculty of Mathematical and Natural Sciences, University of Prishtina, Str. Mother Teresa, 10000 Prishtina, Kosovo

THE EQUATIONS FOR TRANSFORMATION OF COORDINATES, TIME AND FREQUENCY IN SPECIAL RELATIVITY ARE LINEARLY DEPENDENT

S. Klinaku¹

¹University of Prishtina, Faculty of Mathematical and Natural Sciences, Sheshi Nëna Terezë, 10000, Prishtina, Kosovo

MNEMONIC DEVICES IN PHYSICS

J. Bogdanoska¹ and B. Mitrevski²

^{1,2}Institute of physics, Faculty of sciences and mathematics, Ss. Cyril and Methodius University, Arhimedova 3 1000 Skopje, Republic of Macedonia

THE VOLUME RATIO MEASUREMENTS OF STATIC EXPANSION SYSTEM APPLIED TO KOSOVO MEDIUM VACUUM STANDARD

Arber Zeqiraj,^{1,*} Sefer Avdiaj,²

¹University of Prishtina, Department of Physics, Mother Teresa av 3, Prishtina 10000, Kosovo

²University of Mitrovica, Faculty of Geoscience, PIM Trepça, Kosovo