

SCIENTIFIC PROGRAM

Wednesday, June 19, 2024



ARRIVAL OF PARTICIPANTS	09:00 – 13:00
MEETING OF SOLVERS OF THE PROJECT QM4ST EXCHANGE OF EXPERIENCES, DISCUSSION	09:30 – 11:30
REGISTRATION AND CHECK-IN AT THE HOTEL RECEPTION	11:00
LUNCH	11:30 – 14:00
OPENING CEREMONY	15:00
<hr/> PLENARY SESSION A1 <i>Introductory Lectures</i>	<hr/> 15:05

R. D. Gonzalez Betancourt, J. Krempaský, S. W. D'Souza, J. Zubáč, R. J. Gonzalez-Hernandez, A. Hariki, Z. Šobáň, G. Springholz, K. Uhlířová, K. Olejník, J. Kuneš, J. Minár, J. H. Dil, K. Výborný, J. Sinova, T. Jungwirth, P. Wadely, S. T. B. Goennenwein, A. Thomas, H. Reichlová, J. Železný, L. Šmejkal, and D. Kriegner

Altermagnetism: The Case of MnTe

Ihor Shtablavyi, Stepan Mudry, Yuriy Kulyk, Yuriy Plevachuk, Peter Švec, and Peter Švec Sr.
Effect of Laser Processing Modes on Selective Laser Melting of Fe₈₆B₁₄ Amorphous Alloys

Samuel Kern, Pavol Neilinger, Martin Baránek, Mátyás Kocsis, Gergő Fülöp, and Miroslav Grajcar

Model for Optical Properties of NbTiN Thin Films Considering Quantum Corrections to Conductivity

COFFEE BREAK 16:15

SESSION A2 ***International Conference:***
Advances in Nuclear Engineering 16:45

Nikola Kurucová, Andrea Šagátová, Carlos Granja, David Hladík, and Bohumír Zaťko
Comparison of Increased Temperature on Timepix3 Detector with SiC vs Si Sensor

Štefan Čerba, Branislav Vrban, Jakub Lüley, Vendula Filová, Otto Glavo, and Vladimír Nečas

Radiation Effects Related to the Dismantling of the SUR Reactor Vessel from the INPE Neutron Physics Laboratory

Vendula Filová, Branislav Vrban, Pavol Blahušiak, Štefan Čerba, Jakub Lüley, Otto Glavo, and Vladimír Nečas

Design of a Coupling of a PADC Detector and a PE Radiator for Neutron Radiography

Matej Kleštinec, Branislav Vrbán, Jakub Lüley, Štefan Čerba, Vendula Filová, and Vladimír Nečas

Radiation Situation Around 160 keV X-Ray Source

Otto Glavo, Branislav Vrbán, Štefan Čerba, Jakub Lüley, Vendula Filová, and Vladimír Nečas
Neutronic Comparative Study of SCALE, SERPENT, and MCNP

Acknowledgment.

This international conference was supported by the Slovak Research Development Agency within the project No. APVV VV-20-300, APVV VV-21-0170 and by Nureco o. z.

SESSION B1 **7th international workshop:**

Current Successes in the Photoemission and Electron Microscopy I. 16:45

This international workshop was supported by the project Quantum materials for applications in sustainable technologies (QM4ST), reg. no. CZ.02.01.01/00/22_008/0004572 by Programme Johannes Amos Comenius, call Excellent Research.



Co-funded by
the European Union



Martin Gmitra, Marko Milivojević, K. Szalowski, and D. Legut

Rashba Angle Enhancement in Graphene Proximitized by 1T-TaS₂ Monolayers

Jozef Haniš, Marko Milivojević, and Martin Gmitra

Effect of Mixed Superconducting Order Parameter on Quasiparticle Interference in Ising NbSe₂ Superconductor

Juraj Mnich, Marko Milivojević, and Martin Gmitra

First Principles Study of Magnetism and Polarization in 1T-NiI₂ Bilayer

Zoltán Tajkov, Jozef Haniš, Marko Milivojević, and Martin Gmitra

Bifurcation of Topological Phases in Two Dimensional Ising Superconductor NbSe₂ Monolayer

Timon Moško, Marko Milivojević, Dominik Legut, and Martin Gmitra

First Principles Study of α -NbSi₂N₄ Ground State Magnetic Properties

Sunil Wilfred DSouza, Ján Minár, Juraj Krempaský, Libor Šmejkal, Jan Hugbo Dil, and Tomáš Jungwirth

Spin-Splitting in Collinear Antiferromagnetic MnTe : Inception and Manifestations

Petr Novák, Tomáš Bárta, Lucie Nedvědová, Štěpánka Jansová, and Rostislav Medlín

Investigation of the Evolution of Bismuth Layers Deposited on Silicon by MBE

SESSION C1 *Nuclear Science and Technology, Irradiation of Materials,
Radiation Detection I.*

18:15

Vladimir Slugen, and Jana Simeg Veternikova

Critical Analysis of the Primary Circuit Components Important to LTO's Safe Operation of NPP VVER 440 and VVER 1000

Jana Simeg Veternikova, Stanislav Sojak, Martin Petriska, and Vladimir Slugen

Thermal Ageing of VVER Reactor Pressure Vessel Steel

Robert Hince, Vladimir Slugen, and Branislav Stribrnsky

Seismic Safety Issue for Operation and Lifetime Extension of Nuclear Facilities in Slovakia

Sofia Gašparová, Vladimír Kršjak, Matúš Húska, Vladimír Slugeň, Stanislav Sojak, Martin Petriska, Yamin Song, and Jarmila Degmová

PAS Assessment of Radiation Embrittlement of RPV Welds

Ladislav Hrubcín, Bohumír Zaťko, and Eva Kováčová

Silicon Radiation Detectors with Rectifier Junction Prepared by Different Technological Procedures

Bohumír Zaťko, Andrea Šagátová, and Eva Kováčová

Detection and Spectrometric Properties of the 4H-SiC Schottky Detectors Based on Thick Epitaxial Layers

SESSION C2 *Nuclear Science and Technology, Irradiation of Materials,
Radiation Detection II.*

18:15

Branislav Stribrnský, Róbert Hince, and Gabriel Farkas

Modelling of an Old HPGe Detector

Branislav Vrban, Jakub Lüley, Štefan Čerba, Vendula Filová, Otto Glavo, and Vladimír Nečas

Simulation of Radiation Doses in the Laboratory of Nuclear Physics of SAS in Piešťany

Soňa Kotorová, Andrea Šagátová and Bohumír Zaťko

Analysis of CdTe Detectors Via Alpha and Gamma Spectrometry

Andrea Šagátová, Eva Kováčová, Anna Benčurová, Anna Konečniková, Dagmar Gregušová, Vladimír Nečas, and Bohumír Zaťko

The Bias Effect on Alpha Spectrometry of Very Thin Semi-Insulating GaAs Detectors

Jakub Lüley, Branislav Vrban, Štefan Čerba, and Vladimír Nečas

Comparison of TRANSURANUS and FEMAXI Codes

SESSION C3 *New Materials and Structures, Nanostructures and Thin Films, Their
Analysis and Specific Applications I.*

18:15

Ján Ziman, Peter Duranka, Jozef Onufer, and Mária Kladivová

Magnetization Reversal in Cylindrical Wire with Helical Anisotropy

Katarína Viskupová, Tomáš Fiantok, Branislav Grančič, Peter Švec Jr., Tomáš Roch, Martin Truchlý, Viktor Šroba, Leonid Satrapinsky, Peter Kúš, and Marián Mikula
Influence of Boron Deficiency on Structural Stability of Thin $V_{1-x}W_xB_{2-\Delta}$ Films

Robert Andok, Katia Vutova, Elena Koleva, Anna Konecnikova, Mario Ritomsky, and Ivan Kostic

The Study of the Resist Profile in PMMA Bilayer on SiO_2/Si Substrate

Magdaléna Poláčková, Tomáš Plecenik, Pavol Ďurina, Leonid Satrapinsky, Tomáš Roch, and Maroš Gregor

Fabrication and Transport Properties of Josephson S/F/S Junctions

Marek Veveričík, Peter Bury, and František Černobila

Memory Effect Phenomena in Doped Liquid Crystals

Štefan Hardoň, Jozef Kúdelčík, and Marián Janek

The Effect of ZnO and Al_2O_3 Nanofillers on the Volume Resistance of New Cold-Curing Polyurethane

SESSION C4 *New Materials and Structures, Nanostructures and Thin Films, Their
Analysis and Specific Applications II.*

18:15

Dávid Košovský, Marcel Miglierini, Tomáš Kmječ, Milan Štefánik, Július Dekan, and Marek Bujdoš

Microstructural Changes in ODS Steels During Long-Term Annealing

Jaroslava Škriniarová, and Vladimír Chmelko

The Impact of Manufacturing Technology on the Properties of Solid Substances (Metals)

Justín Adamko, Lívia Provázková, and Denisa Olekšáková

Modelling of the Preparation Process of Properties of Soft Magnetic Materials

Magdaléna Kadlečíková, and Michal Kolmačka

Electronic Processing of Thermoelectric Voltages in HF CVD Reactor for Synthesis of Carbon Nanotubes

Viktor Poverzhuk, Lubov Romaka, Yuriy Plevachuk, Irena Janotova, Peter Svec Sr., and Rada Novakovic

Microstructure and Electrophysical Properties of Cu-Based Binaries of Multicomponent Bi–Cu–Ga–In–Sn Alloys

WELCOME PARTY (HOTEL RESTAURANT)

20:00-24:00

Thursday, June 20, 2024

BREAKFAST

07:00

SESSION A3 *New Materials and Structures, Nanostructures and Thin Films, Their
Analysis and Specific Applications III. and Physical Properties and Structural
Aspects of Solid Materials I* 08:15

Srdjan Petrović, Nikola Starčević, Radek Holeňák, Eleni Ntemou, and Daniel Primetzhofer
**Interdependence of Angular Distribution and Charge State of Hyper-Channeled keV
Ions**

Nikola Starcevic, Srdjan Petrovic, Mallikarjuna Rao Motapothula, and Mark Breese
Experimental Study of Zero Degree Focus

Marian Janek, Jozef Kudelcik, Stefan Hardon, and Rastislav Igaz
**Measuring the Thermal Conductivity of Polyurethane with Various Admixtures of
Aluminum Nitride Nanoparticles**

Mariana Ušáková, Rastislav Dosoudil, Elemír Ušák, Martin Šoka, and Edmund Dobročka
**Effect of Samarium Doping on the Structural, Magnetic and Microwave Properties of
Spinel Ferrites and Magnetic Polymer Composites**

Milan Pavúk, Róbert Hinca, and Vladimír Slugeň
Effect of Vibration-Isolation Measures on AFM Height Measurement

Daniel George Grey, and Marcel Bruno Miglierini
**Influence of Different Proportions of Tin on the Properties of an Amorphous
Fe(Co)-Sn-B System**

Jozef Dobrovodský, Dušan Vaňa, Filip Ferenčík, and Zoltán Száraz
Scope and Sensitivity of Analysis of the New ToF-ERDA Installation

*Olexiy Yakovenko, Peter Švec, Dusan Janickovic, Peter Švec Sr., Tadeusz Kulik, Grzegorz
Cieslak, Maryana Akulcheva, Yaroslav Kurys, and Oleksandr Roik*
Nanoporous Co-Ni-Based Materials for Electrocatalysis Applications

*Yuriy Plevachuk, Peter Švec Sr., Peter Švec, Irena Janotová, Dušan Janičkovič, Lubomir
Orovčík, Otto Bajana, and Viktor Poverzhuk*
**Influence of Nanosized Ni/Ceramic Reinforcements on Mechanical Properties of Sn-
3.0Ag-0.5Cu Alloy**

SESSION B2 **International workshop:**

Current Successes in the Photoemission and Electron Microscopy II. 08:30

This international workshop was supported by the project Quantum materials for applications in sustainable technologies (QM4ST), reg. no. CZ.02.01.01/00/22_008/0004572 by Programme Johannes Amos Comenius, call Excellent Research.



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Marko Milivojević, Marcin Kurpas, Maedeh Rassekh, Ivan Štich, and Martin Gmitra

Hydrostatic Pressure Control of the Spin-Orbit Proximity Effect and Spin Relaxation in a Phosphorene-WSe₂ Heterostructure

Michal Procházka, Jan Koloros, Jiří Rezek, Tomáš Kozák, Pavel Baroch, and Ján Minár

Photoemission Analysis of Cu₂O Thin Films Doped by Nitrogen

Anna Benediktová, Lucie Nedvědová, and Ján Minár

Medium-Entropy Ti-Zr-Nb Thin Films Prepared by Magnetron Sputtering: Structural TEM Study

Laurent Nicolai, Vladimir Strocov, Juraj Krempaský, Hubert Ebert, Jürgen Braun, Federico Bisti, Nicholas Pike, Matthieu Verstraete and Ján Minár

Probing the Effects of NbSe₂ on Few-Layer Rhombohedral Graphite Using Tight-XPS Limit In Soft X-Ray Photoemission Spectroscopy on Ag(001): Experiment vs Theory

COFFEE BREAK

10:00

SESSION B3 **International workshop:**

Current Successes in the Photoemission and Electron Microscopy III 10:30

Saleem Ayaz Khan, Laurent Nicolai, Maria Christine Richter, Olivier Heckmann, Laxman Nagi Reddy, Waly Ndiaye, Mauro Fanciulli, Karol Hricovini, and Ján Minár

Detailed Investigation of Hf (0001) Surface Contamination on Valance Band Photoemission: Theory vs Experiments

Trung-Phuc Vo, Olena Tkach, Sylvain Tricot, Didier Sébilleau, Aimo Winkelmann, Olena Fedchenko, Yaryna Lytvynenko, Dmitry Vasilyev, Hans-Joachim Elmers, Gerd Schönhense, and Ján Minár

Analyzing Core Level Photoelectrons by Diffraction and Circular Dichroism Via Means of First-Principle Scattering Calculations

Yashasvi Mehra, Aki I. O. Pulkkinen, Jan Minar, Samuel Bealieu, Sotirios Fragkos, Marcin Rosmus, Natalia Olszowska, Edyta Beyer, Tomasz Sobol, Mauro Fanciulli, Olivier Heckmann, Karol Hricovini, and Maria Christine Richter

On-Site Coulomb Energy in TMDC Compounds by Resonant Photoemission

Jyoti Kaswan, Laurent Nicolai, Michal Procházka, Sarath Sasi, Aki Pulkkinen, Veronica Vavruňková, Stefanie Gärtner, Zdeněk Sofer, and Ján Minár

Electronic Structure Study of Intercalated Transition Metal Dichalcogenide

SESSION C5 *Physical Properties and Structural Aspects of Solid Materials II.* 10:30

Violetta Alexandrovna Andreyachshenko, and Marat Kenesovich Ibatov
Study of Phase Transformations in the $\text{Al}_{60}\text{Fe}_{40-x}\text{Si}_x$ System

Marián Palcut, Pavol Priputen, Žaneta Gerhátová, Romana Tomšová, Martin Sahul, and Martin Kusý
Microstructure and Corrosion Performance of Hypereutectic Al-4 at. % Co Alloy

Anton Baran, Štefan Hardoň, Jozef Kudelčík, and Jaroslav Hornak
DMA and NMR Study of Polyurethane-Based Nanocomposites

Arna Zhanatkyzy Aiken, and Violetta Alexandrovna Andreyachshenko
Evolution of Microstructure and Properties in Fe, Si-Rich Al-Fe-Si Alloy

Ondřej Michal, Pavel Trnka, Pavel Prosr, Jiří Kopřiva, and Jaroslav Hornak
Mechanical and Structural Characterization of Novel Polyesterimide Nanocomposites

Ol'ga Fričová, Natália Šmídová, and Mária Hutníková
Structural Characterisation of Biodegradable PBAT-TPS Blends Using FT-IR Spectroscopy

Veronika Hidaši Turiničová, Martin Moško, Juraj Feilhauer, Syed A. M. Tofail, and Maroš Gregor
Study of Pendant Drop in Electric Field Generated by Electron Beam-Irradiated Hydroxyapatite

Peter Kollár, Robert Maciaszek, Martin Tkáč, Ján Fúzer, Radovan Bureš, and Mária Fáberová
Magnetic Properties of Fe- Al_2O_3 Soft Magnetic Composites

SESSION C6 *Physical Properties and Structural Aspects of Solid Materials III.* 10:30

Denisa Olekšáková, Tetiana Rudeichuk, and Peter Kollár
Exploring the Impact of Different Milling Parameters of Fe/SiO₂ Composites on Their Magnetic Properties

Beata Butvinová, Irena Gejdoš Janotová, Peter Švec Sr., Igor Matko, Dušan Janičkovič, and Leonardo Viana Dias
Magnetic Characteristics of $(\text{Fe}_{75}\text{Co}_{10}\text{B}_{15})\text{Cu}_0$ and $\text{Cu}_{1.5}$ Amorphous and Nanocrystalline Alloys

Lívia Provázková, Marián Reiffers, Tetiana Rudeichuk, Denisa Olekšáková, and Peter Kollár
Effect of the Size of Mechanically Milled Fe Powder on Its Magnetic Properties

Martin Predanocy, Pavol Nemeč, Jaroslava Škriniarová, Robert Andok, and Pavol Hrkút
Enhanced Lift-Off Using Toluene and Chlorobenzene for a Single-Step Positive AZ Photoresist Process-Flow

Simona Saparová, Oľga Fričová, Natália Šmídová, Hamed Peidayesh, Ivan Chodák, and Mária Koval'aková

NMR Study of Blends of Thermoplastic Starch and Poly(Butylene-Adipate-Co-Terephthalate) Compatibilized with Liquid Isoprene Rubber

Leoš Ondriš, Anton Baran, Mária Koval'aková, Hamed Peidayesh, and Oľga Fričová

XRD and DMA Study of Biodegradable Blends of Poly(Butylene-Adipate-Co-Terephthalate) and Thermoplastic Starch Compatibilized with Liquid Isoprene Rubber

Lenka Hašková, and Elemír Ušák

Non-Destructive Inspection of Steel-Based Structural Components: Exploring the Potential of Magnetic Adaptive Testing for Measurement and Metrology

Miroslava Zemanová Diešková, Soňa Kotorová, Goran Bulatovič, and Peter Bokes

Simple Model for Heat Transfer in Magnetic Nanofluid-Enhanced Oil-Filled Transformers

SESSION C7 *Computational Physics. Applied Optics, Optical Communications* 10:30

Andrej Ťrge, and Vladimír Kutíš

Piezoelectric Shell Finite Element Model and Reduction

Rastislav Róka, and Marek Lichý

Analysis of the Energy Efficiency in the Future NG-PON Networks Utilizing the WDM Technology

Šimon Berta, and Vladimír Goga

Numerical Modelling and Experimental Analysis of Piezoelectric Energy Harvester

Michal Miloslav Uličný, Vladimír Kutíš, Bence Szabó, and Kristián Ondrejčka

Thermal Analysis of 20 W PEMFC Stack

Jozef Kravčák, and Peter Vrábek

Numerical Analysis of Magnetization Reversal in Glass-Covered CoSiB Microwires

Gabriel Gálik, Michal Miloslav Uličný, Šimon Berta, and Juraj Paulech

System Model of Battery Module Using CFD Thermal Analysis

Juraj Paulech, and Martin Baťa

Analysis of Battery Module Cooler for Electric Vehicles

Matej Hanzalík, and Juraj Paulech

FEM Simulation of MEMS Accelerometer

Dana Seyringer, Fadi Dohnal, Jan Latal, Petr Siska, Jozef Chovan, František Uherek, Stanislav Hejduk, Jiri Stipal, and Kamil Trubak

16-Channel, 100 GHz Colorless AWG for New Generation Optical Networks

Juraj Chlpík, Soňa Kotorová, Michal Bennár, Ján Dérer, Ján Šoltýs, and Július Cirák

Spectroscopic Ellipsometry Material Model of a Thin Au Layer Prepared by Evaporation

LUNCH	11:30 -14:00
SOCIAL PROGRAMME (FREE PROGRAM)	14:00
DINNER AND FRIENDSHIP PARTY (GRILL PARTY) IN VATRA CLUB AND OUTDOOR TERRACE	19:30 - 23:00

Friday, June 21, 2024

BREAKFAST	07:00
CHECK OUT AT THE HOTEL RECEPTION	08:00-11:30

PLENARY SESSION A4 <i>Physical properties and structural aspects of solid materials and their influencing</i>	09:00
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Elemír Ušák, Mariana Ušáková, Martin Šoka, and Ján Lokaj
Modification of Structure and Magnetic Characteristics of Nickel Ferrites by Ruthenium Substitution

Juraj Krempaský

A Tale of Three Atoms Displaying Ferroelectric, Ferrimagnetic and Altermagnetic Order

This contribution was supported by the project Quantum materials for applications in sustainable technologies (QM4ST), reg. no. CZ.02.01.01/00/22_008/0004572 by Programme Johannes Amos Comenius, call Excellent Research.

CONCLUDING REMARKS (CONGRESS HALL)	10:00
COFFEE BREAK	10:05
LUNCH	11:30
DEPARTURE	13:00