

SCIENTIFIC PROGRAM

Wednesday, June 25, 2025



ARRIVAL OF PARTICIPANTS 09:00 – 13:00

MEETING OF SOLVERS OF THE PROJECT *QM4ST*,
EXCHANGE OF EXPERIENCES, DISCUSSION 09:00

REGISTRATION AND CHECK-IN AT THE HOTEL RECEPTION 11:00

LUNCH 11:30 – 14:00

OPENING CEREMONY 15:00

PLENARY SESSION A1 *Introductory Lectures* 15:05

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

Arrayed Waveguide Gratings: Design and Applications

Martin Veis, Jakub Železný, and Karel Výborný

Magneto-Optical Kerr Effect in MnTe: Manifestation of Broken Symmetries

Erik Vitols, Vinicius Vaz da Cruz, Thomas Fransson, and Iulia Emilia Brumboiu

Computational Approaches for RIXS: Benchmarking and Applications to Organic Molecules used in Photovoltaics

COFFEE BREAK 16:15

SESSION A2 *7th International Conference:*
Advances in Nuclear Engineering 16:45

Lubomir Sklenka, and Milan Stefanik

Role of Experiments in State-of-the-Art Nuclear Education and Nuclear-Related Multidisciplinary Research

Monika Bírová, Štefan Gmuca, and Ján Kliman

Preparation of Thin Nuclear Targets by the HIVIPP Method

Peter Mičian, Lukáš Hamřík, Štěpán Foral, Karel Katovský, Pavel Máca, Myeong Kwan Seo, Suwon Lee, and Do Hyun Hwang

Comparative Simulation of ATF Cladding Material in a PWR Reactor under Severe Accident Conditions Using the MELCOR and MAAP Codes

Pavel Máca, Jitka Vojáčková, Karel Katovský, Peter Mičian, and Lukáš Nesvadba

Burnup Simulation of High-Density Fuel in a VVER-1000 Fuel Assembly

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

Performance of PCA in PADC Detector Analysis for Fast Neutron Measurement

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

Primary Design of a Neutron Activation System for a DD Neutron Generator at STU Bratislava

Štefan Čerba, Marián Vojs, Miroslav Behul, Branislav Vrban, Jakub Lüley, Viera Stopjaková, and Vladimír Nečas

First Experimental Evaluation of the Smart IoT Based Radiation Measurement Nodes at STU

Filip Révai, Branislav Vrban, Štefan Čerba, Jakub Lüley, Otto Glavo, Vendula Filová, Vladimír Nečas, Juraj Valluš, and Nikita Saito

Preliminary Testing of Neutron Defectoscopy System

Acknowledgment.

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

SESSION B1 8th 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.



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Karol Hricovini, Laxman Nagireddy, Maria Christine Richter, Olivier Heckmann, Mauro Fanciulli, Natalia Olszowska, Marcin Rosmus, Weimin Wang, Laurent Nicolai, Ján Minár, and Saleem Ayaz Khan

Emergence of Flat Bands in Solids: Case of Hf(0001)

Saleem Ayaz Khan, Laxman Nagireddy, Maria Christine Richter, Olivier Heckmann, Mauro Fanciulli, Natalia Olszowska, Marcin Rosmus, Weimin Wang, Laurent Nicolai, Ján Minár, and Karol Hricovini

ARPES Studies of Hf(0001) Surface: Flat Bands Formation in the Dice Lattice

H. J. Elmers, O. Tkach, Y. Lytvynenko, P. Yogi, M. Schmitt, D. Biswas, J. Liu, S.V. Chernov, Q. Nguyen, M. Hoesch, D. Kutnyakhov, N. Wind, L. Wenthau, M. Scholz, K. Rossnagel, A. Gloskovskii, C. Schlueter, A. Winkelmann, A.-A. Haghighirad, T.-L. Lee, M. Sing, R. Claessen, M. Le Tacon, J. Demsar, G. Schönhausen, and O. Fedchenko

Presence of Chirality in the Kagome System CsV₃Sb₅

Shivalika Sharma, Aki Pulkkinen, Liviu Chioncel, Ján Minár, and Igor Di Marco
Strong Correlation Effects in the Magnetic Kagome Materials Fe₃Sn and Fe₃Sn₂

Juraj Krempaský
Unveiling the Dual Nature of Altermagnetic Photoresponse in MnTe

Viera Skakalova, Peter Kotrusz, Thuy An Bui, Marian Precner, Artem Pershin, Martin Hulman, and Kimmo Mustonen
MoS₂ and WS₂ Heterostructures Synthesized in Graphene Oxide at Ambient Conditions

Martin Gmitra, Maedeh Rassekh, and Marko Milivojević
Self Spin-Orbit Torque in Proximitized Graphene on 1T-TaS₂ Monolayer

Jakub Schusser, Hibiki Orio, Sotirios Fragkos, Nina Giroto Erhardt, Akib Javed, Sarath Sasi, Quentin Courtade, Muthu Masilamani, Maximilian Ünzelmann, Florian Diekmann, Baptiste Fabre, Dominique Descamps, Stéphane Petit, Fabio Boschini, Jan Minar, Yann Mairesse, Claude Monney, Friedrich Reinert, Kai Rossnagel, Dino Novko, and Samuel Beaulieu
Ultrafast Nonequilibrium Dynamics of Room Temperature Charge Density Wave Fluctuations in 1T-TiSe₂

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

18:45

Robert Hincá, and Vladimír Slugen
Analysis of the KS-150 Reactor Emergency Event in 1976: Coolant Loss and Fuel Overheating Serious Incident

Jana Simeg Veternikova, Marek Kovac, Maria Domankova, Martin Petriska, and Vladimír Slugen
Assessment of Long-Term Structural Changes in a VVER-1000 Reactor Flange Stud

Slavomír Bebjak, Miriama Lacková, and Boris Kvizda
Application of a Realistic Approach to Heat Transfer in the ALLEGRO Reactor Core

Sofia Gašparová, Vladimír Kršjak, Yamin Song, Pavol Noga, Jaroslav Šoltés, Marek Mikloš, Martin Petriska, Stanislav Sojak, Dušan Vaňa, Zoltán Száraz, Branislav Stríbrnský, Róbert Hincá, Tielong Shen, and Jarmila Degmová
Evaluating Proton Irradiation for Simulating Early Neutron Damage in F/M Steels Using Positron Annihilation Spectroscopy

Katarína Sedlačková
Modelling of Amptek's Experimenter's XRF Kit for X-ray Fluorescence Analysis Using MCNPX Code

Petr Dařilek, and Marek Randík
Fine Reactivity Control at Reactor ALLEGRO – Primary Proposal

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

18:45

Nikola Kurucová, Andrea Šagátová, Eva Kováčová, and Bohumír Zaťko

Effect of Epitaxial Layer Thickness on the Electrical Properties of SiC Detectors

Jakub Lüley, Vendula Filová, Pavol Blahušiak, Branislav Vrbán, Štefan Čerba, Otto Glavo, Filip Révai, and Vladimír Nečas

Solid-State Nuclear Track Detectors for Radon Measurements in Soils

Otto Glavo, Branislav Vrbán, Štefan Čerba, Jakub Lüley, Vendula Filová, Filip Révai, and Vladimír Nečas

SERPENT 2.2 Neutronic Study of the Depleted EBR-II Core

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

Evaluation of Potential Materials for the Construction of the DD Type Fast Neutron Collimator

Soňa Kotorová, Andrea Šagátová, Jozef Osvald, and Bohumír Zaťko

Effect of Temperature on the Electrical Properties of CdTe Radiation Detector

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

18:45

Katarína Viskupová, Viktor Šroba, Jun Lu, Daniel Primetzhof, Bartosz Wicher, Vladyslav Rogoz, Tomáš Roch, Martin Truchlý, Marián Mikula, Ivan Petrov, Lars Hultman, and Grzegorz Greczynski

Dense Hard TiB_x Films Grown by Magnetron Sputtering without Substrate Heating Using W-Ion Irradiation

Magdaléna Kadlečíková, Ivan Hotový, Naman Kumar, Ivan Kostič, and Michaela Sojková
E_{12g} Band of Raman Spectral Characteristics of Nanostructured WS₂ Films Sputtered on Sapphire

Magdaléna Poláčková, Mikhail Belogolovskii, Elena Zhitlukhina, Branislav Grančič, Leonid Satrapinskyy, Pavol Ďurina, Tomáš Plecenik, and Maroš Gregor

**Nonlocal Electrical Transport in NbN-Based
Superconductor/Ferromagnet/Superconductor Microstructures**

Marek Veveričík, Peter Bury, and František Černobila

Enhancement of Memory Effect in Liquid Crystals

Veronika Hidaši Turiničová, Magdaléna Poláčková, Tomáš Roch, Viktor Šroba, Syed A.M. Tofail, and Maroš Gregor

Oxygen Deficiency and Crystallinity as Determinants of Charge Trapping in Hydroxyapatite Thin Films

SESSION C4 *New Materials and Structures, Nanostructures and Thin Films, Their
Analysis and Specific Applications II.* 18:45

Marian Janek, Stefan Hardon, Jozef Kudelcik, Ondrej Michal, and Miroslav Gutten
**Simulation-Enhanced Measurement of Thermal Conductivity Coefficient in
Polyurethane with Admixtures**

Štefan Hardoň, Jozef Kúdelčík, Marián Janek, and Jaroslav Hornak
**Effect of Halloysite Nanoclay on Dielectric and Mechanical Properties of
Nanocomposite**

Goran Bulatovič, and Peter Bokes
Parametric Study of Natural Convection Loop Model

Patrik Novák, Marian Marton, and Marian Vojs
Study of Doped Diamond Layers by X-ray Diffraction

WELCOME PARTY (HOTEL RESTAURANT) 20:00-23:00

Thursday, June 26, 2025

BREAKFAST 07:00

SESSION A3 *New Materials and Structures, Nanostructures and Thin Films, Their
Analysis and Specific Applications. Physical Properties and Structural
Aspects of Solid Materials I.* 09:00

Marek Flaska, Stuti Surani, Roman Samulyak, Federico Scurti, and Douglas Wolfe
**Development and Experimental Assessment of Periodic-Nanostructure Coatings for
Improved Detection Properties of High-Refractive-Index Inorganic Scintillators**

Nikola Starcevic, and Srdjan Petrovic
FCC Crystals Channeling Rainbows - Determination of Crystal Structure

Paulina Jureczko, and Marcin Kurpas
**Electronic and Optical Properties of Bilayer PtSe₂: Twist Angle and Pressure
Dependence**

*Martin Predanocy, Katia Vutova, Anna Bencurova, Mario Ritomsky, Evgeniy Manoilov, and
Ivan Kostic*
**Comparative Study of the Negative Resists ARN 7520 and ma-N 2410 in Electron Beam
Lithography**

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 Commenius, call Excellent Research.



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Sourour Ayari, Laurent Nicolai, Aki Pulkkinen, Ridha Eddhib, Saleem Khan, Vo Trung Phuc, Jan Minar, and Mauro Fanciulli

Spin and orbital polarization in WSe₂ : Insights from Layer-Resolved Analysis

Juraj Mnich, Marko Milivojević, and Martin Gmitra

Charge to Spin Interconversion Coefficients as the Function of a Chemical Potential in Proximitized Graphene on 1T-TaS₂ - the Effect of a Perpendicular Electric Field

J. Kaswan, R. Salazar, S. W. Dsouza, L. Nicolai, S. Sasi, V. Vavruňková, A. Hartl, V. Strocov, J. Krempaský, H. Reichlová, D. Kriegner, M. Rosmus, N. Olszowska, Z. Sofer, S. Gartner, and Jan Minár

The CD-ARPES Study of Intercalated Transition Metal Dichalcogenide V_{1/3}NbS₂

Ridha Eddhib, Aki Pulkkinen, Sihem Jaziri, and Jan Minar

Interlayer Excitons Engineering in Transition Metal Dichalcogenides Heterobilayer

Yashasvi Mehra, Samuel Beaulieu, Mauro Fanciulli, Olivier Heckmann, Karol Hricovini, Marchin Rosmos, Natalia Olszowska, Tomasz Sobol, Edyta Beyer, Aki I. O. Pulkkinen, Jan Minar, and Maria Christine Richter

Exploring Resonant Photoemission and Coulomb Interactions in Transition Metal Chalcogenides

Ondřej Caha, Lakshmi Sajeew, Petr Pazourek, Tetyana Zakusylo, and Gunther Springholz
Phase Transitions in Epitaxial Films of Ferroelectric Chalcogenides

Laurent Nicolai, Jan Minár, Maria Christine Richter, Olivier Heckmann, Jean-Michel Mariot, Uros Djukic, Johan Adell, Mats Leandersson, Janusz Sadowski, Jürgen Braun, Hubert Ebert, Jonathan D. Denlinger, Ivana Vobornik, Jun Fujii, Pavol Šutta, Gavin R. Bell, Martin Gmitra, and Karol Hricovini

Topological Material in the III–V Family: Heteroepitaxial InBi on InAs

COFFEE BREAK

10:15

SESSION B3 **International workshop:**
Current Successes in the Photoemission and Electron Microscopy III 10:30

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Gerd Schönhense

New Understanding of Photoelectron Diffraction: Experiment

Jan Minar, Trung-Phuc Vo, Olena Tkach, Aki Pulkkinen, Didier Sebilliau, Aimo Winkelmann, Olena Fedchenko, Yaryna Lytvynenko, Dmitry Vasilyev, Hans-Joachim Elmers, and Gerd Schönhense

New Understanding of Photoelectron Diffraction: Theory

Trung-Phuc Vo, Olena Tkach, Aki Pulkkinen, Didier Sebilliau, Aimo Winkelmann, Olena Fedchenko, Yaryna Lytvynenko, Dmitry Vasilyev, Hans-Joachim Elmers, Gerd Schönhense, and Jan Minar

Unveiling Fine Structure and Energy-Driven Transition of Photoelectron Kikuchi Diffraction

Timon Moško, and Martin Gmitra

Magnetic and Electronic Properties of Monolayer α -NbSi₂N₄

Michal Procházka, Kalyani Shaji, Stanislav Haviar, Eliška Benediktová, Radomír Čerstvý, Ján Minár, Petr Zeman, and Jiří Čapek

XPS Study of CuO, WO₃ and CuWO Nanoparticles-Based Films

R. Adam, C. Greb, D. E. Bürgler, D. Cao, S. Heidtfeld, J. Cheng, I. Komissarov, H. Hardtdegen, M. Mikulics, M. Büscher, Roman Sobolewski, and C. M. Schneider

THz Generation Control in Ta/Fe/Ru/Ni Spintronic Emitters

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

Justín Murín, Vladimír Goga, Juraj Hrabovský, Juraj Paulech, Gabriel Gálik, and Vladimír Kutiš

Influence of Geometric Nonlinearity and Heating on the Dynamic Parameters of Free Natural Vibration of Nylon Springs with Negative Thermal Expansion

Jaroslava Škriniarová, Marek Gašparík, and Michal Dzurilla

Monitoring of Fatigue Safety of Gas Pipelines Weld Joints

Marián Drienovský, Marián Palcut, Pavol Priputen, and Ivona Čerňáková

Tensile Strength and Microstructure of Cu-Cu Joints Soldered with SnAgCu-xCe Alloys

Milan Pavúk, and Marcel Miglierini

Broadening of Topographical Protrusions in AFM Images upon Increasing Sampling Density

Beata Butvinová, Irena Gejdoš Janotová, Peter Švec Sr., Yuriy Plevachuk, and Dušan Janičkovič

Magnetic Behavior of Amorphous FeCoB(Cu) Alloys after Low Stress Annealing

Ol'ga Fričová, Michaela Sedničková, Natália Šmídová, Leoš Ondriš, and Mária Kovaľáková
Characterization of Thermoplastic Starch/Lignin Composites Using ^1H NMR Spectroscopy

Jaroslav Hornak, Petr Kadlec, Vit Funtal, Milan Palenicek, Ondrej Michal, Stefan Hardon, Zdislava Mokra, and Pavel Trnka

Impact of UV Aging on Filler Migration Through Cable Insulation Used in Photovoltaic Systems

Anton Baran, Natália Šmídová, Štefan Hardoň, and Jozef Kúdelčík

Solid-State ^1H and ^{27}Al NMR Study of Polyurethane Nanocomposites Containing Halloysite Nanofiller

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

Simona Saporová, Ol'ga Fričová, Natália Šmídová, Hamed Peidayesh, Ivan Chodák, and Mária Kovaľáková

Effects of Liquid Isoprene Rubber and Glycerol Content on the Structure and Molecular Mobility of Thermoplastic Starch/PBAT Blends During Storage

Leoš Ondriš, Anton Baran, Mária Kovaľáková, Ľuboš Popovič, Michaela Sedničková, and Ol'ga Fričová

Study of Structure and Molecular Dynamics of Lignin-Reinforced Thermoplastic Starch

Ondřej Michal, Jaroslav Hornak, Marian Janek, Zdislava Mokra, and Pavel Trnka
Dielectric Properties of Polyester-Imide Resin Modified with Micro-Cellulose and Nano-SiO₂ for Sustainable Electrical Insulation Systems

Jozef Kúdelčík, Štefan Hardoň, and Tomasz N. Koltunowicz

Materials Degradation Immersed in Transformer Oil Due to Discharge

Peter Kollár, Martin Tkáč, Denisa Olekšáková, Robert Maciaszek, Radovan Bureš, Mária Fáberová, and Ján Füzer

Magnetic Properties of Fe-based Composite in Small Magnetic Field

Denisa Olekšáková, Lívia Provázková, Justín Adamko, and Peter Kollár
Decomposition of Energy Losses in Iron-Based Compacted Powder Materials

Jozef Kravčák and Michaela Gondeková

Transition from Single-Peak to Double-Peak Behavior of the GMI Effect in Cobalt-Base Microwires

Peter Vrábel, Peter Duranka, Jozef Onufer, and Mária Kladivová

Magnetization Processes in Stressed Annealed Amorphous Ribbons

SESSION C7 *Computational Physics. Applied Optics, Optical Communications.
Interdisciplinary physics of condensed matter*

10:30

Edyta Prajwos, Rafał Bielas, Elżbieta Nowicka, Anna Kicińska-Jakubowska, Ivo Šafařík, and Arkadiusz Józefczak

Natural Textile Modified by Magnetic Nanoparticles for Acoustic Mats

Filip Ratajczak, Rafał Bielas, Jozef Kudelčík, Štefan Harďoň, and Arkadiusz Józefczak
Acoustic Evaluation of Droplet Size Distribution in Magnetic Pickering Emulsions

Marek Lichý, and Rastislav Róka

**Possibilities of Reducing the Energy Consumption of NG-PON Networks Using
Advanced DWBA Algorithms**

Norbert Tarjányi, Ivan Melo, Jozef Onufer, and Daniel Káčik

Effect of Magnetic Field on Deflection of an Optical Fiber Combined with a Microwire

Johann Zehetner, Johann Hochreiter, Dana Seyringer, Fadi Dohnal, and Felix Wäger
Experimental Assessment of Birefringent Optical Fibres for Sensor Applications

Michail Kozachok, and Kornel Richter

**Enhancement of the Matteucci Effect in Amorphous Glass-Coated Microwires by
Geometrical Constriction**

Matej Novák, and Miroslav Mikolášek

**Impact of Short Current Pulse at Various State of Charge and State of Health Levels on
Internal Resistance for Accurate LIB Temperature Estimation**

*Michal Hausner, Juraj Chlpík, Jaroslav Kováč, Roman Michelko, Pavol Valko, and Július
Cirák*

**Refractive Index Measurement of Aqueous Mixtures Using Surface Plasmon-Enhanced
Ellipsometry**

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 27, 2025

BREAKFAST 07:00

CHECK OUT AT THE HOTEL RECEPTION 08:00-11:00

PLENARY SESSION A4 *Computational physics and theory of physical properties of matter.*
Interdisciplinary physics of condensed matter. 09:00

Rafał Bielas, Tomasz Kubiak, Filip Ratajczak, and Arkadiusz Jóźefczak
The Behaviour of Particle-Stabilized Droplets under Ultrasound and Magnetic Fields

Filip Ratajczak, Bassam Jameel, Rafał Bielas, and Arkadiusz Jóźefczak
Ultrasound Heating with Pickering Droplets

Marcin Kurpas, Paulina Jureczko, Jozef Haniš, Paulo E. Faria Junior, and Martin Gmitra
Type-II Ising Pairing in Centrosymmetric Superconductors: Insights from First-Principles Calculations

CONCLUDING REMARKS (CONGRESS HALL) 10:00

COFFEE BREAK 10:05

LUNCH 11:30

DEPARTURE 13:00