

GIREP-EPEC 2023 Conference, Košice, Slovakia

Monday, 3 July 2023 - Friday, 7 July 2023

Faculty of Science, UPJS, Košice, Slovakia

Programme

Monday, 3 July 2023

Registration - Plenary hall (08:00 - 09:30)

GIREP: Opening ceremony - Plenary hall (09:30 - 10:00)

Plenary talk: Eilish McLoughlin - Plenary hall (10:00 - 11:00)

-Conveners: Chairman: Marisa Michelini

time	title	presenter
10:00	Physics Teacher Professional Learning: innovative models for promoting culture and addressing societal issues	MCLOUGHLIN, Eilish

Poster Set-Up - Poster 1/Poster 2 (11:00 - 11:40)

time	title	presenter
11:00	Coffee break	

Plenary talk: Ľubomír Antoni, Gabriel Semanišín - Plenary hall (11:40 - 12:40)

-Conveners: Chairman: Claudio Fazio

time	title	presenter
11:40	Challenges in AI-generated physics education	SEMANIŠÍN, Gabriel ANTONI, Ľubomír

Hybrid session - later: 075,078,087,177 - Room 1H (13:40 - 15:30)

-Conveners: Chairman: Giacomo Torzo

time	title	presenter
13:40	New experiment to understand the role of CO ₂ in global warming	MARON, Valentin
14:00	First outcomes a teaching-learning sequence on quantum information and computation	MALGIERI, Massimiliano
14:20	Astronomy and Arduino applications in Physics class	PETO, Maria
14:40	Teaching Scientific Practices Through Low-Cost Tools: An Experiment with High School Students	GABELLI, Lucia

Innovative curricula: 013,028,074,088,089 - Room 4 (13:40 - 15:30)

-Conveners: Chairman: Jozef Hanč

time	title	presenter
13:40	Starting points for a new physics curriculum according to leading physicists	KOLÁŘ, Petr
14:00	Teachers' and students' views on physics textbooks	FÜRSTOVÁ, Tereza
14:20	How well do physics textbooks meet the the development of Scientific Literacy skills	JOUBRAN, Fadeel

14:40	Application of Item response curves analysis and Rasch model on physics knowledge tests of Croatian students	ŠTIBI, Ivana
15:00	What we know and can know from the TIMSS Advanced physics testing of the final-year students of secondary school in the Czech Republic	PŠCHOTNEROVÁ, Petra

Innovative strategies at school: 007,008,015,017 - Room 2 (13:40 - 15:30)

-Conveners: Chairman: Tetyana Antimirova

time	title	presenter
13:40	Fostering gifted students in physics	KORNER, Marianne
14:00	Critical Reading in Physics Lessons	VELMOVSKÁ, Klára
14:20	Multimedia-supported electricity teaching via the application "Puma : Spannungslabor"	STOLZENBERGER, Christoph
14:40	Trustworthiness as Central Design Principle for Introducing Uncertainties of Measurements to Students	NAGEL, Clemens

Innovative strategies at University: 137,152,184,181 - Room 5 (13:40 - 15:30)

-Conveners: Chairman: Paul Logman

time	title	presenter
13:40	The relationship between degrees of freedom and the thermodynamic and Boltzmann entropies in complex thermal systems.	SANDS, David
14:00	Using peer-reviewed papers to design new type problems	ŠARLAH, Andreja
14:20	Enhancing University First-Year Physics Education: Implementation of Interactive-Engagement Methods for Deeper Conceptual Understanding	JESKOVA, Zuzana
14:40	Decision-making by students in lab courses: stimulating students' reasoning when choosing apparatus in experiments	LOGMAN, Paul

Workshop Innovative strategies at university: 025 - Workshop 1 (13:40 - 15:10)

-Conveners: Gerald Feldman; Guillaume Schiltz

time	title	presenter
13:40	Creating a Student-Centered Collaborative Learning Environment in a University Physics Classroom	FELDMAN, Gerald SCHILTZ, Guillaume

Digital technologies: 176,048,051,185 - Room 4 (16:00 - 17:30)

-Conveners: Chairman: Michael Fox

time	title	presenter
16:00	Open Data Science Tools and Artificial Intelligence in Physics Education & Research	HANČ, Jozef
16:20	Equipping the Youth for the 21st Century - Open Data and Scientific Literacy for All	VETELI, Peitsa
16:40	Integrating Python data analysis in an existing introductory laboratory course	TUFINO, Eugenio
17:00	Context dependence of machine-learning models for the analysis of argumentation in undergraduate lab reports	FOX, Michael

Hybrid session - later: 021,129,157,006 - Room 1H (16:00 - 17:30)**-Conveners: Chairman: Claudio Fazio**

time	title	presenter
16:00	Old (but Gold) Quantum Theory – A coherent framework for high-school students and teachers	LOVISETTI, Luisa
16:20	Deciding the future of Quantum Technologies	GOORNEY, Simon
16:40	Astronomy concepts in the primary education: a case Brazilian school	MOMETTI, Carlos
17:00	Algebraic graphs and equations versus kinematics graphs and equations – High School teachers' perceptions	PHAGE, Itumeleng

Innovative strategies at University: 043.097.132 - Room 5 (16:00 - 17:30)**-Conveners: Chairman: Gerald Feldman**

time	title	presenter
16:00	Developing an analytical framework to characterize physics teachers' approaches to the pedagogy of derivations	MASHOOD, KK
16:20	Supporting collaborative conceptual change in Physics: analysing the voice, argumentation, and social interaction	KÄHKÖNEN, Anna-Leena
16:40	Students' experiences of applying vector quantities to rotational motion	FÄLDT, Åke

Workshop Informal and non-formal learning: 100 - Workshop 2 (16:00 - 17:30)**-Conveners: Viera Haverlíková**

time	title	presenter
16:00	PhysLab Break – escape games for physics education	HAVERLÍKOVÁ, Viera

Workshop Innovative strategies at university: 198 - Workshop 1 (16:00 - 17:30)**-Conveners: David Sands**

time	title	presenter
16:00	Conceptual Approaches To Teaching	SANDS, David

GIREP: Welcome Reception - Restaurant (18:00 - 19:00)

Tuesday, 4 July 2023

Registration - Plenary hall (08:00 - 09:00)

Plenary talk: Ian Bearden - Plenary hall (09:00 - 10:00)

-Conveners: Chairman: Zuzana Ješková

time	title	presenter
09:00	The importance of laboratory instruction in the physics curriculum	BARDEN, Ian

Poster Set-Up - Poster 1/ Poster 2 (10:00 - 10:40)

Hybrid session - early: 053,054,141,147,019 - Room 1H (10:40 - 12:40)

-Conveners: Chairman: Andreja Šarlah

time	title	presenter
10:40	Developing scientific thinking in early childhood	BEMBICH, Caterina
11:00	EXAMINING PRE-SERVICE PRIMARY TEACHERS' PEDAGOGICAL CONTENT KNOWLEDGE FOR TEACHING SCIENCE THROUGH VIDEO ANALYSIS	APPIANI, Elisa
11:20	Teaching gain: a measure of Physics teachers' improvements	BOLOGNA, Valentina
11:40	Short videos for elaborative encoding of physics principles before lectures with Peer Instruction	GJERDE, Vegard
12:00	Developing Instrument to Study the Cross-Disciplinary Coherence of Energy Concept image	LEHAVI, Yaron

Innovative strategies at school: 038,047,056,064,066 - Room 4 (10:40 - 12:40)

-Conveners: Chairman: Jitka Houfková

time	title	presenter
10:40	Effectiveness of MiniPIX detector activities dispelling high school students' misconceptions about radioactivity and ionising radiation	PARCERISAS BROSSA, Daniel
11:00	Measuring the effectiveness of motion simulation programs in high school physics education	RADNAI, Tamás
11:20	The influence of hypotheses before experiments on data-based conclusions after experiments	CHROSZCZINSKY, Sophia
11:40	DBR projects in Physics Education Research – why and how?	HAAGEN-SCHÜTZENHÖFER, Claudia
12:00	Investigating high school students' gaze patterns when learning with Feynman diagrams	DAHLKEMPER, Merten Nikolay

Lab work and experiments: 004,073,080,093 - Room 5 (10:40 - 12:40)

-Conveners: Chairman: Leoš Dvořák

time	title	presenter
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10:40	STEM recipes for digital natives	VITKÓCZI, Fanni
11:00	Students' intrinsic motivation in the context of their level of engagement in physics experimentation	NIKITIN, Alexandr
11:20	Measuring the average speed of a comet	SANDRELLI, Stefano
11:40	Do It Yourself: a Simple Model of the Kibble Balance	DVOŘÁK, Leoš

Workshop Innovative strategies at school: 171 - Workshop 1 (10:40 - 12:10)

-Conveners: Mojca Čepič

time	title	presenter
10:40	How a simple activity can open a door to serious inquiry: The boat competition	ČEPIČ, Mojca

Workshop Remote and Online Teaching and Learning: 003 - Workshop 2 (10:40 - 12:10)

-Conveners: David Sokoloff

time	title	presenter
10:40	Home-Adapted Interactive Lecture Demonstrations: Active Learning at Home	SOKOLOFF, David

Hybrid session - later: 042, 083,138,186,199 - Room 1H (13:40 - 15:30)

-Conveners: Chairman: Micol Alemani

time	title	presenter
13:40	Introduction to Measurement Uncertainties for Middle School Classes	LOIDL, Hannah
14:00	The construction of PET bottle rockets with water propulsion were means used to develop a Meaningful Learning of Newton's Third Law in a High School class	RIBEIRO, Grazielle Aparecida Correa
14:20	Prospective primary teacher education on electric phenomena	PAGNUTTI, erik
14:40	The Kaleidoscope : a case of the reflection of light	MARTINEZ VICTORIA, Ruth
15:00	Improving pre-service science teachers' mastery in designing and implementing inquiry experiments in physics concepts	YILMAZ SENEM, Beril

Innovative strategies at school: 044,153,146,158,085 - Room 5 (13:40 - 15:30)

-Conveners: Chairman: Katarína Kozelková

time	title	presenter
13:40	Teaching electric circuits using real-world contexts – effects on conceptual understanding, interest, and self-concept	GOTTSCHLICH, Benedikt
14:00	Heat and temperature in middle school: step by step towards complexity through experiments and a narrative approach	CORNI, Federico
14:20	Students' perceptions on the assessment in physics lessons	KOZELKOVÁ, Katarína
14:40	Probing a space exploration awareness in a Swedish secondary school	POPOV, Oleg
15:00	The Impact of Using Multimedia Technology in Learning Conceptual Electrical Knowledge	FRANK, Florian

Interdisciplinary approaches: 049,058,118,057 - Room 4 (13:40 - 15:30)

-Conveners: Chairman: Jozef Hanč

time	title	presenter
13:40	Student's Conceptions of the Greenhouse Effect: Consistent ideas or fragmented pieces?	SCHUBATZKY, Thomas
14:00	FisicaMente al Liceo: a project for interlacing mathematics and physics in secondary school	LIPPIELLO, Stefania
14:20	Teaching Physics through Astronomy in secondary school: the Asiago Teachers' Network on Astrophysics	CARLI, Marta
14:40	The student laboratory Labs4Future: How climate change knowledge can be linked to effective action	GROTHAUS, Jonathan

Physics teacher education: 024,016,174,188,204 - Room 2 (13:40 - 15:30)

-Conveners: Chairman: Marián Kireš

time	title	presenter
13:40	Elixir to Schools - 10 years of continuous support for teachers	DVOŘÁKOVÁ, Irena
14:00	Supporting physics teachers in the implementation of innovative teaching methods and inspiring learning environments	KIRES, Marian
14:20	Investigating pre-service physics teachers' understanding of functions, formulas and equations in lab courses: A pilot study	GKIOKA, Olga
14:40	The influence of teacher's experience on students' argumentation	KISS, Tünde
15:00	Teachers' responses to students' explanations	DODLEK, Danijela

Workshop Innovative strategies at school: 039 - Workshop 2 (13:40 - 15:10)

-Conveners: Gabriela Pavlendova; Lubica Varečková

time	title	presenter
13:40	ARPHYMEDS Erasmus Project Educational Tool for Increasing Attractivity of Learning Physics Using Augmented Reality and 3D Models	PAVLENDOVA, Gabriela MARČEK CHORVATOVÁ, Alžbeta

Hybrid discussion workshop: Physics and Society - Plenary hall (16:00 - 17:30)

-Conveners: Aristotelis Gkiolmas; Chairman: Giorgos Peikos

time	title	presenter
16:00	Discussion Workshop on "Physics and Society"	GKIOLMAS, Aristotelis

Hybrid session - later: 014,136,112,156,006 - Room 1H (16:00 - 17:40)

-Conveners: Chairman: Tomasz Greczylo

time	title	presenter
16:00	Teaching the subtleties of entanglement via the delayed-choice two-slit experiment with polarizers	FREERICKS, James
16:20	A Visual tour of Quantum Technologies	KARYDI, Eleni
16:40	Design and implementation of a mechanical balance using electromagnetism concepts and active learning	MONTERO, Eduardo

17:00	Evaluation of professional profiles and teacher training for physics teachers in Mexico and Chile	RAMÍREZ DÍAZ, Mario Humberto
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Informal and non-formal learning: 130,069,018 - Room 2 (16:00 - 17:30)

-Conveners: Chairman: Viera Haverlíková

time	title	presenter
16:00	Investigating the colloquial knowledge of pupils and students in the area of understanding basic concepts of thermodynamics.	ROSIEK, Roman
16:20	Quantum physics in the past, present and future of Finnish university students	ANTTILA, Daria
16:40	Bridging the gap between cutting-edge science and school: non-formal education in high-energy physics	TOMASIK, Boris

Lab work and experiments: 079,055,148,023 - Room 3 (16:00 - 17:30)

-Conveners: Chairman: Marián Kireš

time	title	presenter
16:00	The role of models in physics and in science: some educational experiments	DI MAURO, Marco
16:20	Electromagnetism in high school: Classroom experimentation with Arduino	SCHNIDER, Dorottya
16:40	Developing Augmented Reality (AR) teaching materials for undergraduate physics	PETTS, PHILIPPA
17:00	A kit to study light-matter interaction using a smartphone, incandescent lamps, LEDs and solar cells	TORZO, Giacomo

Workshop Digital technologies: 206 - PC Lab (16:00 - 17:30)

-Conveners: Ton Ellermeijer

time	title	presenter
16:00	Surprising and interesting projects with Coach	ELLERMEIJER, Ton DEMKANIN, Peter

GIREP: Cooperating bodies meeting - Restaurant (18:00 - 19:30)

Wednesday, 5 July 2023

Plenary talk: Anna T. Danielsson - Plenary hall (09:00 - 10:00)

-Conveners: Chairman: David Sands

time	title	presenter
09:00	Unexpected trajectories into higher education physics: Perspectives on gender, identity and culture	DANIELSSON, Anna T.

GIREP: Medal award ceremony - Plenary hall (10:40 - 11:40)

Plenary talk: Mojca Čepič - Plenary hall (11:40 - 12:40)

-Conveners: Chairman: Dagmara Sokolowska

time	title	presenter
11:40	From theoretical studies of liquid crystals to professional learning communities of teachers	ČEPIČ, Mojca

Innovative strategies at school: 011,162,026 - Room 4 (13:40 - 15:10)

-Conveners: Chairman: Wim Peeters

time	title	presenter
13:40	Measurement uncertainties: when to introduce the topic in secondary education?	KOK, Karel
14:00	Introduction of Newton's laws through model rocket construction	PESTHY, Sándor Gergely
14:20	RPG-based Gamification in Physics Teaching	HERENDI, Borbála

Innovative strategies at University: 041,060,166,187 - Room 5 (13:40 - 15:10)

-Conveners: Chairman: Paula Ruth Heron

time	title	presenter
13:40	Peer discussions with MCQs after immediate feedback	IRGENS, Børge
14:00	Understanding two types of notations for radio wave propagation	RISSANEN, Antti
14:20	Addressing the gap in Continuous Professional Development of Academic Teachers– a case study	SOKOŁOWSKA, Dagmara
14:40	Undergraduate Physics Laboratories for Remote Teaching and Learning	ANTIMIROVA, Tetyana

Students' identity, inclusion and wellbeing: 150,191 - Room 2 (13:40 - 14:25)

-Conveners: Chairman: Eilish McLoughlin

time	title	presenter
13:40	The Effect of Introductory Physics Course on Life Sciences Students' Attitudes toward Physics	ÖZMEN, Kübra
14:00	HoPE (Hands on Physics Experience): creativity and collaborative construction of knowledge develop lifelong learning competences	TREVISSOI, Maria Cristina

Workshop Contemporary physics and modern physics: 139, hybrid session - Room 1H (13:40 - 15:10)**-Conveners: Sergej Faletic**

time	title	presenter
13:40	Teaching and learning quantum entanglement	MICHELINI, Marisa POSPIECH, Gesche FALETIC, Sergej

Workshop Physics teacher education: 134 - Workshop 1 (13:40 - 15:10)**-Conveners: Paula Heron**

time	title	presenter
13:40	The "International Handbook of Physics Education Research": Insights, Themes, and Future Directions	HERON, Paula

Teachers' best practices: 212,213 - Room 2 (14:25 - 15:10)**-Conveners: Chairman: Eilish McLoughlin**

time	title	presenter
14:25	PHYSICS KALEIDOSCOPE - From Simple Tools to Inspirative Physics Education	JUHASOVA, Antonia
14:45	Conducting a STEM career information day for the 8th grade in the form of a digital congress during the Corona pandemic	BAUER, Sebastian

Poster session 1: LAB, DIG, INT, INF - Poster 1 (15:40 - 16:40)

time	title	presenter
15:40	The use of a spreadsheet in the experimental activities at secondary school	SPODNIAKOVA PFEFFEROVA, Miriam
15:40	Some experiments to teach the physical bases of the greenhouse effect: thermal emission and selective absorption	TOFFALETTI, Stefano
15:40	Teaching physics using artificial intelligence	KOSZTYÓ, Péter
15:40	Development of experimental sets in optics for inquiry-based laboratory	CEHÁKOVÁ, Lydia KOPŘIVA, Tomáš
15:40	Learning physics with i-learning materials of the Erasmus project ARphymedes Plus	PAVLIN, Jerneja
15:40	Study of the free damped oscillations of an elastic rubber band by using a smartphone	FAZIO, Claudio
16:00	Waves in a digital infinite mirror	NORBERT CSABA, Balla
16:00	Fidget spinner – a simple experiment and Java applet	BORDAS, Arpad
16:00	Hanging the planets in the Sun	SANDRELLI, Stefano
16:00	Building an Autonomous Car: A STEM Teaching/Learning Sequence by Project-Based Learning for the training of future secondary school teachers	PORTILLO-BLANCO, Ane
16:00	Periodic Motion in a little different way or supporting teachers' experimental activities using non-traditional digital technologies.	HRUŠKA, Martin
16:00	STEAM-Active TLS design protocol	ZUZA, Kristina

16:20	The Virtual School project: learning to teach Physics through a virtual community of practice	CARLI, Marta
16:20	Non-Formal Physics Educational Activities Impact on Secondary School Students	TRONOV, Ivan
16:20	Teaching and learning physics through augmented reality: Erasmus+ KA201 Project ARphymedes	ZIHERL, Sasa
16:20	The IPPOG Resource Database: Making particle physics outreach & education available worldwide	BRUANT GULEJOVA, Barbora
16:20	Physics game as a stimulus for experimental activity	SUKELOVÁ, Tatiana
16:20	Optics Experiments as a Teaching Resource for the Development of Scientific Thinking in Elementary School Students	GARCÍA GAITÁN, Claudia Carolina

Contemporary and modern physics: 012,128,164,173 - Room 5 (16:40 - 18:10)

-Conveners: Chairman: Gesche Pospiech

time	title	presenter
16:40	Seeing Quantum Physics in the Classroom: Navigating the Landscape of Demonstration Material	FOLKERS, Bart
17:00	Conceptual Understanding of Climate Change of German A-level Students	WACKERMANN, Rainer
17:20	Development of the mental models of wave and particle as basis for wave-particle duality	OCKHORST, Rutger
17:40	Designing and evaluating a questionnaire on the quantum physics measuring process	POSPIECH, Gesche

Innovative strategies at school: 121,179,189,163 - Room 4 (16:40 - 18:10)

-Conveners: Chairman: Federico Corni

time	title	presenter
16:40	Teachers' perspectives and practices on teaching the properties of matter	ÜNAL, Ayçin
17:00	Theatrical Activities on Magnetic Phenomena for the Scientific Learning in Primary School	SUALDIN, Irene
17:20	Elixir to Schools - Attracting and supporting the teachers of the youngest to take up science	HOUFKOVÁ, Jitka
17:40	Promoting inquiry skills in lower secondary level. Physics from the suitcase	BENCZIK, Izabella Julia

Symposium hybrid: 190 - Room 1H (16:40 - 18:10)

-Conveners: Chairman: Kristina Zuza

time	title	presenter
16:40	New perspective in Physics education research and teaching & learning Physics in Latin-American Countries	LORENZO, Gabi

Workshop Interdisciplinary approach: 076 - Workshop 2 (16:40 - 18:10)

-Conveners: Barbora Bruant Gulejova

time	title	presenter
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16:40	How to connect basic sciences and sustainable development in the school curricula	BRUANT GULEJOVA, Barbora
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Workshop Physics teacher education: 036 - Workshop 1 (16:40 - 18:10)

-Conveners: Smadar Levy

time	title	presenter
16:40	Physics Card Games: Learning or Fun? Pedagogical Considerations and Teachers' Attitudes	LEVY, Smadar PERL-NUSSBAUM, David YERUSHALMI, Edit

Thursday, 6 July 2023

Plenary talk: Italo Testa - Plenary hall (09:30 - 10:30)

-Conveners: Chairman: Paul Logman

time	title	presenter
09:30	Use of quantitative methods in Physics Education Research: searching for new perspectives to inform theory and practice	TESTA, Italo

Hybrid session - early: 092,167,192,194,077 - Room 1H (11:10 - 12:50)

-Conveners: Chairman: Sergej Faletič

time	title	presenter
11:10	Facilitating the understanding of quantum mechanics: risks and benefits of Artificial Intelligence in an African context	DILLMANN, Baudouin
11:30	Speaking the Unspeakable 2023 – an exhibit on quantum entanglement and Bell's inequality	BONDANI, Maria
11:50	Visualizing Entanglement in multi-Qubit Systems	BLEY, Jonas
12:30	The Quantum Jungle for Secondary-School Education	CHIOFALO, Maria Luisa (Marily)

Symposium: COL: 197 - Room 5 (11:10 - 12:40)

-Conveners: David Sands

time	title	presenter
11:10	School-University Collaborations: an exploration of issues and possible solutions.	SANDS, David

Symposium: DIG: 99 - Room 3 (11:10 - 12:40)

-Conveners: Claudio Fazio

time	title	presenter
11:10	Methods and technological tools to support active learning at school and university	FAZIO, Claudio TUFINO, Eugenio ALEMANI, Micol BATTAGLIA, Onofrio Rosario DEMKANIN, Peter

Symposium: INT: 30 - Room 2 (11:10 - 12:40)

-Conveners: Marco Giliberti

time	title	presenter
11:10	Cultural Understanding of Physics: Instruments and Methods	GILIBERTI, Marco KARWASZ, Grzegorz LOVISETTI, Luisa ORGANTINI, Giovanni ROSI, Tommaso

Symposium: SCH: 155 - Room 4 (11:10 - 12:40)**-Conveners: Federico Corni**

time	title	presenter
11:10	Physics education in kindergarten: children learning and teachers training	CORNI, Federico

Contemporary and modern physics: 022,052,086,114,165 - Room 5 (13:40 - 15:30)**-Conveners: Chairman: Italo Testa**

time	title	presenter
13:40	Students' hybrid perspectives about wave function and quantum measurement: A cross-national study	TESTA, Italo
14:00	Implementing quantum cryptography protocols using MACROBITS	PEREIRA, Joao
14:20	Experiences in Teaching/Learning Quantum Information Science	TÓTH, Kristóf
14:40	The effectiveness of mathematical representations for the understanding of Quantum Mechanics	CAMPAGNARO, Stefano
15:00	Using Variation Theory to Understand How Students Relate an Idealised Model to a Paul Trap in the Physics Laboratory	KILDE LÖFGREN, Sebastian

Hybrid session - later: 035,081,113,145,175 - Room 1H (13:40 - 15:30)**-Conveners: Chairman: Thomas Schubatzky**

time	title	presenter
13:40	New Topics and New Tools in Physics Education	PICCIONE, Andrea
14:00	Interdisciplinary Lesson Study in Italian High School focused on the energy transformations.	ADESSO, Maria Giuseppina
14:20	The Photoelectric Effect and the Electromagnetic spectrum learning through the study of the implementation of spectroscopy techniques in Art analysis.	SAAVEDRA, Brenda Ixcuiname
14:40	Fibonacci sequence in interdisciplinary laboratory: from electric nets to elastic springs	CAPONE, Roberto
15:00	Connecting physics teaching to sustainability challenges: The GREEN-EDU project experience	PERSANO ADORNO, Dominique

Innovative strategies at University: 037,116,125 - Room 4 (13:40 - 15:30)**-Conveners: Chairman: Ian Bearden**

time	title	presenter
13:40	Non-constant acceleration kinematics. University students' difficulties related to representation systems	ZUZA, Kristina
14:20	Challenges in Designing Basic Physics Course for Undergraduate Biologists - investigating difficulties with learning physics	KACZMAREK, Mirela
14:40	A multi-representational simulation to learn about vector fields	HAHN, Larissa

Workshop Innovative strategies at university: 002 - Workshop 2 (13:40 - 15:10)**-Conveners: David Sokoloff**

time	title	presenter
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13:40	Introduction to Active Learning in Optics and Photonics (ALOP)	SOKOLOFF, David
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Workshop Lab work and experiments: 046 - Workshop 1 (13:40 - 15:10)

-Conveners: Marina Babayeva

time	title	presenter
13:40	LEGO building blocks sets as an experimenting tool in Physics Classroom	BABAYEVA, Marina

Poster session 2: PTE, UNI, IDE, SCH, CUR, CMP - Poster 2 (16:00 - 17:00)

time	title	presenter
16:00	Introducing quantum physics concepts through lesson materials on quantum technology	OCKHORST, Rutger
16:00	A survey on conceptual aspects in implementing a teaching intervention module on light spectroscopy	CATENA, Danilo
16:00	Case Studies for Small-Group Student Collaboration in Large-Enrolment Introductory Physics Classes	ANTIMIROVA, Tetyana
16:00	E ⁴ : training science teachers on energy using imaginative forms of expression	CORNI, Federico
16:00	School science models of energy and their representation by in-service training	TISON, Estelle
16:20	Gender disparities in STEM degree programs and academic orientation actions	DRYDEN SILVA, Eva Elisa
16:20	Socioscientific Decision-Making – From Theory to Practice	FASCHING, Matthias
16:20	Fostering pre-service physics teachers' diagnostic skills and readiness through video vignettes and micro-teaching sessions: An exploratory single-case study	KRUMPHALS, Ingrid
16:20	Learning Using Mentors (LUM) – a learning method designed to be easily implemented and to help teachers in the common school system	ŠMAHEL, Jaroslav
16:20	Students' ideas on the weather phenomenon foehn and their conceptual understanding of p-V diagrams - An explorative study	KRUMPHALS, Ingrid
16:40	Students' conceptions of the scientific underpinnings of climate change: A systematic review of the literature	WILDBICHLER, Sarah
16:40	Is the Revolutionary ChatGPT an Aristotelian Thinker?	BOROVSKÝ, Dominik
16:40	Awakening a sense of belonging to the professional community in pre-service physics teachers	HAYERLIKOVÁ, Viera
16:40	Engineering students' understanding of the core physical concepts in Mechanics and Electromagnetism: Has anything changed during pre-university education?	ŠTIBI, Ivana
16:40	SCIENTIFIC REASONING OF STUDENTS OF PALACKÝ UNIVERSITY IN 1ST YEAR	HROUZKOVÁ, Tereza
16:40	Analysing students' drawings of the greenhouse effect: common features associated to the understanding of the phenomenon	FIORELLO, Camilla
16:40	To teach or not to teach Quantum Physics? Revisiting goals and practices of instruction in secondary schools	ONORATO, Pasquale
16:40	Students' epistemological beliefs in understanding the 1-D wave equation	RANGKUTI, Muhammad Aswin
16:40	The theory of five pillars of the mind and physics education	ČERVEŇOVÁ, Daša
16:40	Digital Enhancement of Courses in Physical Engineering	BOKES, Peter

GIREP: Closing ceremony - Plenary hall (17:00 - 18:00)

Friday, 7 July 2023

Excursion: Visit of Tokaj vineyard and wine tasting (09:00 - 16:15)

Short excursion: Sightseeing of Košice (09:30 - 11:30)