

# PROGRAM OVERVIEW OF THE 12<sup>TH</sup> INTERNATIONAL CONFERENCE ON PHYSICS TEACHING IN ENGINEERING EDUCATION PTEE 2024

## Facilitating Student Learning in a Changing World

**ROUGH SCHEDULE PTEE 2024 ROSENHEIM**

	WEDNESDAY, 15 <sup>TH</sup>	THURSDAY, 16 <sup>TH</sup>	FRIDAY, 17 <sup>TH</sup>
8 - 9		REGISTRATION & WELCOME	MEETING OF SIG BREAK
9 - 10		KEYNOTE M. DE COCK BREAK	KEYNOTE P. RIEGLER POSTER PITCH BREAK
10 - 11		WORK-SHOP 1 TRACK 1A TRACK 1B	WORK-SHOP 3 TRACK 3A TRACK 3B
11 - 12		LUNCH BREAK	LUNCH BREAK
12 - 13		LABORATORIES @ 7A-7D	POSTER SESSION
13 - 14		WORK-SHOP 2 TRACK 2A TRACK 2B	BREAK
14 - 15		INFO ABOUT EXCURSION	WORK-SHOP 4 TRACK 4A TRACK 4B
15 - 16		EXCURSION	FAREWELL
16 - 17	REGISTRATION & WELCOME		
17 - 18		&	
18 - 19	KEYNOTE S. STAACKS	CONFERENCE	
19 - 20	BAVARIAN DINNER	DINNER	
20 - 21	NETWORKING ACTIVITY		
21 - 22			
22 - 23			



Abstracts can be found in  
alphabetical order of the first author [here](#).

Conference Homepage: [www.ptee2024.de](http://www.ptee2024.de)

## OVERVIEW

### WEDNESDAY, MAY 15<sup>TH</sup>

16:00 – 18:00	Registration & Welcome
18:00 – 19:00	Keynote I
19:00 – 20:00	Bavarian Dinner
20:00 – late	Networking Activity and Networking

*Location: Tante Paula*

### THURSDAY, MAY 16<sup>TH</sup>

08:00 – 08:30	Registration
08:30 – 09:00	Welcome
09:00 – 09:45	Keynote II
10:15 – 11:35	Parallel Session 1: Workshop 1   Track 1A   Track 1B
11:35 – 13:00	Lunch   Optional Guided Lab Tour
13:00 – 14:20	Parallel Session 2: Workshop 2   Track 2A   Track 2B
14:30 – 23:00	Excursion & Conference Dinner

*Location until 15:00: Campus TH Rosenheim*

### FRIDAY, MAY 17<sup>TH</sup>

08:00 – 08:45	Meeting of SIG
09:00 – 09:45	Keynote III
09:45 – 10:05	Poster Pitch
10:15 – 11:35	Parallel Session 3: Workshop 3   Track 3A   Track 3B
11:35 – 12:30	Lunch
12:30 – 13:30	Poster Session
14:00 – 15:20	Parallel Session 4: Workshop 4   Track 4A   Track 4B
15:30 – 16:00	Farewell

*Location: Campus TH Rosenheim*

## CONFERENCE DAY 1

### Wednesday, May 15<sup>th</sup>

#### WELCOME EVENING AND KEYNOTE I – TANTE PAULA

16:00 – 18:00	Registration Welcome	Organizing Team
18:00 – 19:00	Keynote I Smartphones as Measurement Devices: News from the Phyphox- App	Sebastian Staacks RWTH Aachen University (Germany)
19:00 – 20:00	Bavarian Dinner	all
20:00 – late	Networking Activity and Networking	all



Location: Welcome Evening takes place at “Tante Paula”, a nice Bavarian brewery in the center of the city of Rosenheim, 7 minutes foot walk from the train station.

Address: [Tante Paula](#) im Mail-Keller, Schmettererstraße 20, 83022 Rosenheim

## CONFERENCE DAY 2

### Thursday, May 16<sup>th</sup>

#### REGISTRATION – FOYER – MAIN ENTRANCE

08:00 – 08:30 Registration  
Coffee

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#### WELCOME AND KEYNOTE II – B 0.23

08:30 – 09:00 Welcome

Silke Stanzel  
Organizing Team and Dean of Faculty Applied Sciences and Humanities

Heinrich Köster  
President of Rosenheim University of Applied Sciences, TH Rosenheim

Greet Langie  
Vice president of SEFI (*European Society for Engineering Education*),  
KU Leuven (Belgium)

Arjan Lock  
Group Chair of SEFI Special Interest Group of Physics and Engineering Education  
(shortened as SIG of Physics), The Hague University of Applied Sciences (The  
Netherlands)

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09:00 – 09:45 **Keynote II**

The intimate relation between math and physics – beautiful for physicists, hard for students	Mieke De Cock KU Leuven (Belgium)
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#### BREAK

09:45 – 10:15 Coffee and Snacks

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**Location:** The Conferences takes place at Campus Rosenheim building A and B on Thursday and Friday. Find the Campus Plan [here](#).  
**Address:** [TH Rosenheim](#), Hochschulstraße 1, 83024 Rosenheim

## Parallel Session 1: 10:15 – 11:35

### WORKSHOP 1 – SCALE-UP A 2.06

10:15 – 11:35	Using research-based instructional materials to foster conceptual understanding – Tutorials in Introductory Physics	Christian Kautz, TU Hamburg   Julie Direnga, University of Bremen   Tina Fuhrmann, Merseburg University of Applied Sciences   Max Uzulis, TU Hamburg (Germany)	<b>W1</b>
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### TRACK 1A – SCALE-UP B 0.13

10:15 – 11:35	Physics lab in the reformed Applied Physics program at the University of Ljubljana	Ales Mohoric, Nastja Mahne, Gorazd Planinsic, University of Ljubljana (Slovenia)	<b>T1A.1</b>
	Authentic research experiences in a physics laboratory course	Micol Alemani, University of Potsdam (Germany)	<b>T1A.2</b>
	Redesign of a first year physics lab course	Freek Pols, TU Delft (The Netherlands)	<b>T1A.3</b>
	Printed Labs: 3D printed optics experiments	Thorsten Schumacher, Markus Lippitz, University of Bayreuth (Germany)	<b>T1A.4</b>

Chair: Arjan Lock, Group Chair of SIG of Physics, THUAS (The Netherlands)

### TRACK 1B – B 0.14

10:15 – 11:35	Physics Text Books for True Digital Natives: Do they exist?	Johan Van den Bossche, KU Leuven   Greet Langie, KU Leuven, LESEC, ETHER (Belgium)	<b>T1B.1</b>
	Implementing the Inverted Classroom Model (ICM) in Everyday Teaching of First Semester Physics for Engineering: Challenges, Gains and Learnings	Victoria Klemm, Sophie Kröger, HTW Berlin (Germany)	<b>T1B.2</b>
	Flipped Classroom in Teacher Education	Tim Ruhe, TU Dortmund (Germany)	<b>T1B.3</b>
	Flipped Assessment in Engineering Physics	Marika Toivola, samk (Finland)	<b>T1B.4</b>

Chair: Gerald Feldman, GW (United States)

### LUNCH BREAK - MENSA

11:35 – 13:00	Lunch		
12:20 – 13:00	Optional: Guided Lab Tours TH Rosenheim: (Building) Physics Labs   Hybrid Teaching Spaces   Observatory We meet at 12:20 in the Foyer		

## Parallel Session 2: 13:00 – 14:20

### WORKSHOP 2 – SCALE-UP A 2.06

13:00 – 14:20	Rethinking Classical Mechanics for Engineering Undergraduates: A Hands-On Approach to Oscillations and Waves	Julia Neff, Georg Krocker, University of Applied Sciences Mannheim (Germany)	<b>W2</b>
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### TRACK 2A – SCALE-UP B 0.13

13:00 – 14:20	Investigating and addressing student difficulties with basic concepts in fluid dynamics	Christian Kautz, Max Uzulis, TU Hamburg (Germany)	<b>T2A.1</b>
	Mathematical literacy vs. skill in Physics courses	Pamela Sooriyan, University College Dublin (Ireland)   Jennifer Blue, Miami University (United States)   Brian Vohnsen, University College Dublin (Ireland)	<b>T2A.2</b>
	MomenTech – Modern Explorations of the Impulse-Momentum Theorem	Todd Gelbord, City University of New York, New York City College of Technology (United States)	<b>T2A.3</b>
	Learning Physics Methods – Is it possible to teach methods instead of physic contents?	Bernd Jödicke, Jürgen Sum, Christian Hettich, HTWG Konstanz (Germany)	<b>T2A.4</b>

Chair: Christian Kautz, Member of SIG of Physics, TU Hamburg (Germany)

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### TRACK 2B – B 0.14

13:00 – 14:20	Navigating the AI Era: Analyzing the Impact of Artificial Intelligence on Student Responses in Physics Education	Sami Suhonen, TAMK (Finland)	<b>T2B.1</b>
	Investigate Students use of generative artificial intelligence tools in Engineering Programming Assessment	Lama Hamadeh, UCL (United Kingdom)	<b>T2B.2</b>
	Predictive Learning Analytics Generating Learning Feedback: AI Design, Challenges, First Findings	Elmar Junker, Anne Sanewski, TH Rosenheim	<b>T2B.3</b>
	Which students shall we support? – Student types in higher education in physics	Julia Hellwig, Ivonne Möller, Heiko Krabbe, Ruhr-Universität Bochum (Germany)	<b>T2B.4</b>

Chair: Juho Tiili, Member of SIG of Physics, TAMK (Finland)

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## Excursion and Conference Dinner: 14:30 – 23:00

### INTRODUCTION TO EXCURSION – B 0.23

14:30 – 14:50 Excursion into the world of testing - a brief introduction      Andreas Rabold  
TH Rosenheim, ift Rosenheim  
(Germany)

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### EXCURSION PROGRAM & CONFERENCE DINNER

15:00            Bus departure – in front of main building

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15:30 – 17:00    Tour at ift Rosenheim

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18:00 – 22:00    Conference Dinner at Speckalm, Sudelfeld in the Bavarian Alps

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23:00            Arrival back at Rosenheim (Bus stops at train station and TH  
Rosenheim)

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ift Rosenheim GmbH



Speckalm

The conference dinner will take place in a traditional Alpine chalet. There will also be an opportunity to explore the area around the chalet. Please ensure that you wear suitable, sturdy footwear. Temperatures can drop quickly in the mountains in May, so we recommend that you bring a warm jacket.

There will be a group photo before dinner.

## CONFERENCE DAY 3

### Friday, May 17<sup>th</sup>

#### SPECIAL INTEREST GROUP – SCALE-UP B 0.13

08:00 – 08:45 Meeting of SEFI Special Interest Group of Physics and Engineering Education (shortened as SIG of Physics): Group members – all interested people are welcome to join!

Moderation: Arjan Lock, THUAS (The Netherlands)

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#### BREAK

08:45 – 09:00 Coffee and Snacks

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#### KEYNOTE III AND POSTER PITCH – B 0.23

09:00 – 09:45 **Keynote III**  
Decoding the Disciplines: identifying, understanding and overcoming students' barriers to learning and much more

Peter Riegler  
Bavarian Center for Innovative Teaching (BayZiel) (Germany)

09:45 – 10:05 Poster pitch of all presented posters, max. 1 minute each

See page 10

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## Parallel Session 3: 10:15 – 11:35

#### WORKSHOP 3 – SCALE-UP A 2.06

10:15 – 11:35 Creating a Student-Centered Collaborative Group-Learning Environment in a University Physics Classroom

Gerald Feldman, GW (United States) **W3**

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#### TRACK 3A – SCALE-UP B 0.13

10:15 – 11:35 A New Model to Realize Physics Teaching in Tampere University of Applied Sciences

Juho Tiili, TAMK (Finland) **T3A.1**

Enhancing a critical attitude in experimental physics

Freek Pols, TU Delft (The Netherlands) **T3A.2**

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Learning the process of gaining scientific knowledge	Christian Hettich, Jürgen Sum, Bernd Jödicke, HTWG Konstanz (Germany)	<b>T3A.3</b>
What I Wish I Had Known... When I Started (Active) Teaching in Physics	Tina Fuhrmann, University of Applied Sciences Merseburg (Germany)	<b>T3A.4</b>

Chair: Greet Langie, Member of SIG of Physics, KU Leuven (Belgium)

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### TRACK 3B – B 0.14

10:15 – 11:35	Teaching with Physics Online Videos	Matthias Kohl, University of Applied Sciences Koblenz (Germany)	<b>T3B.1</b>
	Effectiveness of activating teaching methods in introductory physics modules – An exemplary comparison between Switzerland and Germany	Andreas Modler, Berliner Hochschule für Technik (Germany)	<b>T3B.2</b>
	Optics in the sky	Agnieszka Popiolek-Masajada, Wrocław University of Science and Technology (Poland)	<b>T3B.3</b>
	Diversification in Physics Teaching by Transforming Pandemic-Era Learning through Open Interactive Textbooks	Wim Bouwman, Jacob Hoogenboom, TU Delft (The Netherlands)	<b>T3B.4</b>

Chair: Sami Suhonen, Member of SIG of Physics, TAMK (Finland)

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### LUNCH BREAK - MENSA

11:35 – 12:30 Lunch

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### POSTER SESSION – CORRIDOR IN FRONT OF B 0.23

12:30 – 13:30 All poster contributions see page 10

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### BREAK

13:30 – 14:00 Coffee and Snacks

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## Parallel Session 4: 14:00 – 15:20

### WORKSHOP 4 – A 4.05

14:00 – 15:20	My personal cloud - drama in thermodynamics	Bojan Markicevic, Boswell-Bèta (The Netherlands)	<b>W4</b>
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### TRACK 4A – SCALE-UP B 0.13

14:00 – 15:20	Introduction to quantum computing using a desktop quantum computer	Christos Paspalides, TUM (Germany)	<b>T4A.1</b>
	Exploring Quantum Computing Technologies in a Choose-Your-Own-Adventure Activity	Judith Gabel, Björn Ladewig, LMU   Christos Paspalides, TUM   Stefan Küchemann, Jochen Kuhn, Tatjana Wilk, LMU   Alexander Holleitner, TUM   Jan von Delft, LMU (Germany)	<b>T4A.2</b>
	Quantum Computing: A Trojan Horse Approach to Teaching Quantum Physics to Engineering Students	Georg Krockner, Hochschule Mannheim (Germany)	<b>T4A.3</b>
	Lithography challenges for applied physics students to develop microstructures and microdevices	Jeroen Oostinga, THUAS (The Netherlands)	<b>T4A.4</b>
Chair:	Yuki Kaneko, Member of SIG of Physics, Sabanci University (Turkey)		

### TRACK 4B – B 0.14

14:00 – 15:20	The Role of Learning Space in Enhancing Active Learning: Introducing the STEM-Center at Tampere University of Applied Sciences	Sami Suhonen, Juho Tiili, TAMK (Finland)	<b>T4B.1</b>
	The lecture of the future: Is flexibility in terms of time and space at the expense of learning success?	Michael Wendlandt, Albstadt-Sigmaringen University (Germany)	<b>T4B.2</b>
	An Applied Examination Format for Measurement Technologies	Martin Versen, TH Rosenheim	<b>T4B.3</b>
Chair:	Günter Kurz, Member of SIG of Physics		

### FAREWELL – SCALE-UP B 0.13

15:30 – 16:00	Closing session Summary and outlook	Organizing Team	
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## Poster Contributions

<b>TITLE</b>	<b>AUTHOR(S)</b>	
Empowering Physics Educators: Experiences from the First Round of European Faculty Online Learning Community Meetings	Julie Direnga, Universität Bremen   Markus Lippiz, Universität Bayreuth   Peter Riegler, BayZiel (Germany)	<b>P01</b>
Teaching physics to engineers in the times of artificial intelligence	Ewa Frączek, Wrocław University of Science and Technology (Poland)	<b>P02</b>
Enhancing education through innovative digital assessment tool	Roman Gruchow, University of Rostock (Germany)	<b>P03</b>
Comparison of synchronous and asynchronous teaching units in a HyFlex Physics course	Robert Kellner, TH Rosenheim	<b>P04</b>
Visualizations in Quantum Physics/Technologies	Björn Ladewig, LMU (Germany)	<b>P05</b>
Grading, learning and credits	Derek Land, Sanne Smit, Bart Kieviet, THUAS (The Netherlands)	<b>P06</b>
Classroom observation in SCALE-UP settings – first results	Christine Lux, Claudia Schäfle, Julia Neubert, TH Rosenheim (Germany)	<b>P07</b>
Opening Up Classroom Demonstration Experiments	Freek Pols, Ron Haaksman, TU Delft (The Netherlands)	<b>P08</b>
Examples on digital and interactive teaching and learning	Heidi Reinholz, Stephan Graunke, Roman Gruchow, Wiebke Loseries, Lukas Maczewsky, Dieter Schick, University of Rostock (Germany)	<b>P09</b>
The Quantum Mechanics Venue – A Cross Reality Learning-Teaching Lab	Tim Ruhe, TU Dortmund (Germany)	<b>P10</b>
Computer-assisted data acquisition in Basic Physics Laboratory Courses	Anke Sander, Marcus Bose, Stefan Krischok, TU Ilmenau (Germany)	<b>P11</b>
Analysis of student conceptual development using the Force Concept Inventory	Silke Stanzel, TH Rosenheim	<b>P12</b>