

**Program**

**Aug 13 - 15, 2025**

**Swedish Physics Days 2025 in Luleå**

Luleå

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## Wed, August 13

9:00 AM

### Section for condensed matter physics and nanophysics: (Chair: Michael Busch, Luleå University of Technology)

Session | Location: E231

9:00 - 9:25 AM **The magnetic flux line - a tool for exploring superconductivity**

**Speaker**

Elizabeth Blackburn

9:25 - 9:40 AM

**Engineering Electron Transport Layers to Boost Solar Cell Performance**

**Speaker**

Muhammad Awais

9:40 - 9:55 AM

**Unveiling the Role of Ultrasound-Induced Chemical Effects on Contact-Electro-Catalysis: A DFT and AIMD Study**

**Speaker**

Yimin Shao

9:55 - 10:10 AM

**Model optimization for magnetic interactions**

**Speaker**

Corina Etz

10:10 - 10:35 AM

**Anisotropic and non-local energy dissipation**

**Speaker**

Danny Thonig

10:40 AM

9:00 AM

### Section for education - Presentations and discussion forum: (Chair: Hans Jakobsson, Polhemsskolan, Lund)

Session | Location: E236

9:00 - 10:40 AM **Bedömningsstöd i fysik - digitala nationella prov**

**Speaker**

Anna Lind Pantzare

10:40 AM

11:00 AM

### Plenary lecture

Session | Location: B192

11:00 - 11:45 AM **Quantum Computing Based on Superconducting Qubits**

**Speaker**

Per Delsing

11:45 AM

11:45 AM

### Lunch

Break | Location: Luleå

1:00 PM

1:00 PM

**Plenary lecture****Session** | **Location:** B1921:00 - 1:45 PM **Molecular spectroscopy with optical frequency combs****Speaker**

Aleksandra Foltynowicz

1:45 PM

2:00 PM

**Section for atomic, molecular and optical physics: (Chair: Aleksandra Foltynowicz, Umeå University)****Session** | **Location:** E2312:00 - 2:15 PM **Welcome and short introduction****Speaker**

Aleksandra Foltynowicz

2:15 - 3:00 PM **Keynote: Laser Remote Microscopy for Insect Diversity Assessment****Speaker**

Mikkel Brydegaard

3:00 - 3:15 PM

**From ion chemistry and isomers on Titan to defence analysis for military applications****Speaker**

David Sundelin

3:15 - 3:30 PM

**Raman spectroscopy for brain tumor detection: Photon-matter interactions as optical biomarkers in neurosurgery****Speaker**

Dirce Pineda Vazquez

3:30 - 3:45 PM

**Nitric Oxide Diagnostics in Plasma Heated Gas using Laser Absorption Spectroscopy****Speaker**

Aurélien Ivanoff

4:00 PM

2:00 PM

**Section for education - Presentations and discussion forum: (Chair: Hans Jakobsson, Polhemsskolan, Lund)****Session** | **Location:** E2362:00 - 4:00 PM **Presentation/rundabordssamtal: Om det pedagogiska samarbetet****Speaker**

Elisabeth Nilsson

4:00 PM

4:30 PM

**Lab tour****Session** | **Location:** E building

5:30 PM

4:30 PM

**Poster session****Session** | **Location:** B192 entrance hall

6:00 PM

6:30 PM

9:00 PM

## Conference dinner

Break | Location: Luleå

## Thu, August 14

9:00 AM	<p><b>Section for atomic, molecular and optical physics: (Chair: Magnus Gustafsson, Luleå University of Technology)</b>  <b>Session   Location: E231</b></p>
	<p>9:00 – 9:30 AM</p> <p><b>Boosting Carbonaceous Research using Advanced Light Sources in Lund</b></p> <p><b>Speaker</b> Kim Cuong Le</p>
	<p>9:30 – 9:45 AM</p> <p><b>High-resolution laser spectroscopy based on Optical Parametric Oscillators</b></p> <p><b>Speaker</b> Mitzi Urquiza</p>
	<p>9:45 – 10:00 AM</p> <p><b><math>H_{\mathbf{3}}^{\mathbf{+}}</math> Formation through Roaming in Cyclopropane</b></p> <p><b>Speaker</b> Ville Lindblom</p>
	<p>10:00 – 10:30 AM</p> <p><b>Ab-initio cavity Born-Oppenheimer methods: How can strong light-matter coupling change chemistry?</b></p> <p><b>Speaker</b> Thomas Schnappinger</p>
10:30 AM	
9:00 AM	<p><b>Section for education - Presentations and discussion forum: (Chair: Hans Jakobsson, Polhemsskolan, Lund)</b>  <b>Session   Location: E243</b></p>
	<p>9:00 – 9:40 AM</p> <p><b>En anledning till varför du som lärare (även i fysik) bör bry dig om AI för lärande</b></p> <p><b>Speaker</b> Marcus Strömbäck Hjärne</p>
	<p>9:40 – 10:40 AM</p> <p><b>AI i fysikundervisning</b></p> <p><b>Speaker</b> Marcus Liwicki</p>
10:40 AM	
11:00 AM	<p><b>Plenary lecture</b>  <b>Session   Location: B192</b></p>
	<p>11:00 – 11:45 AM</p> <p><b>The second AI revolution in fundamental science research</b></p> <p><b>Speaker</b> Tommaso Dorigo</p>
11:45 AM	
11:45 AM	<p><b>Lunch</b>  <b>Break   Location: Luleå</b></p>
1:00 PM	

1:00 PM

**Plenary lecture**

Session | Location: B192

1:00 - 1:45 PM **Attosecond lasers****Speaker**

Anne L'Huillier

1:45 PM

2:00 PM

**Section for atomic, molecular and optical physics: (Chair: Michael Odelius, Stockholm University)**

Session | Location: E231

2:00 - 2:30 PM **Exploring protein molecular diffusion with coherent X-rays****Speaker**

Anita Girelli

2:30 - 2:45 PM **X-ray Molecular Spectroscopy Studies for Radiotherapy Applications****Speaker**

Ouassim Hocine Hafiani

2:45 - 3:00 PM **Novel relativistic laser-driven electron acceleration****Speaker**

Hang Li

3:00 - 3:15 PM

**Relativistic treatment of hole alignment and ultrafast photoionization in noble gases****Speaker**

Rezvan Tahouri

3:15 - 3:30 PM

**Mutual neutralization with manipulated initial quantum level distributions****Speaker**

Rachel Poulouse

3:30 - 3:45 PM

**Broadening of rotational CO lines by H<sub>2</sub> or He collisions at low temperatures****Speaker**

Magnus Gustafsson

4:00 PM

2:00 PM

**Section for education - Presentations and discussion forum: (Chair: Hans Jakobsson, Polhemsskolan, Lund)**

Session | Location: E236

2:00 - 4:00 PM **Workshop om mätfelsbehandling på gymnasienivå****Speakers**

Lukasz Michalak, Elisabeth Nilsson, Lena Claesson

4:00 PM

4:30 PM  
5:15 PM  
5:30 PM  
5:45 PM  
5:45 PM  
6:30 PM

**Plenary lecture**  
Session | Location: B192

4:30 - 5:15 PM **Can You Game Your Way to Knowledge?**

**Speaker**  
Erik Elfgren

**Swedish physical society annual meeting: (Chair: Michael Odelius, Stockholm University)**  
Session | Location: B192

**Oseen medal award and presentation: (Chair: Michael Odelius, Stockholm University)**  
Session | Location: B192

5:45 - 6:30 PM **The quest for high XUV flux using Ytterbium-based laser sources**

**Speaker**  
Ann-Kathrin Raab

## Fri, August 15

9:00 AM

### Section for condensed matter physics and nanophysics: (Chair: Elizabeth Blackburn, Lund University)

Session | Location: E231

9:00 - 9:45 AM

#### Keynote: From the fundamentals of contact-electrification to a disruptive energy technology - the triboelectric nanogenerator

##### Speaker

Zhonglin Wang

9:45 - 10:05 AM

#### Superatoms to the rescue! \*Conditions apply...

##### Speaker

Laura Laverdure

10:05 - 10:25 AM

#### Freeze-casted ceramic with vertically-oriented pores for water transport applications

##### Speaker

Sara Pattaro

10:25 - 10:40 AM

#### First-principles investigation of the hydration behavior in chitosan-modified pSBMA/pAAc hydrogel for enhanced TENG performance

##### Speaker

Rovi Angelo B. Villaos

10:40 AM

9:00 AM

### Section for education - Presentations and discussion forum: (Chair: Stephane François, Luleå University of Technology)

Session | Location: E236

9:00 - 9:20 AM

#### Engaging Students in Physics: Interactive Demonstrations and Peer-Led Teaching Strategies

##### Speaker

Kim Cuong Le

9:20 - 10:40 AM

#### Workshop för lärare kring fysikinnehåll, didaktik/allmän/teknik/läroböcker

10:40 AM

11:00 AM

### Plenary lecture

Session | Location: B192

11:00 - 11:45 AM

#### Post-Li batteries: An atomistic perspective

##### Speaker

Axel Groß

11:45 AM

11:45 AM  
1:00 PM  
1:00 PM  
1:45 PM  
2:00 PM  
5:30 PM

**Lunch**  
Break | Location: Luleå

**Plenary lecture**  
Session | Location: B192

1:00 - 1:45 PM

**Trapping particles: From research on anti-matter to teaching experimental physics in high-schools**

**Speakers**

Fredrik Olof Andre Parnefjord Gustafsson, Jonas Enger

**Excursion**  
Session | Location: Luleå