

# Eric Nilsson | Curriculum vitæ

Department of Physics – Chalmers University of Technology – Gothenburg, Sweden

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**Date of birth:** April 1 1997

**Citizenship:** Swedish

Updated: January 26, 2026

## Education

### Ph.D. Physics (Ongoing)

Gothenburg, Sweden

Chalmers University of Technology

2021-2026

Funded by the Area of Advance Nano (formerly Excellence Initiative Nano).

Research focus: Holographic models for strongly correlated electron systems and unconventional transport in 2D materials.

Supervisor: Prof. Ulf Gran. **Planned defense date: June 11, 2026**

**Licentiate thesis:** *Electron Transport and Collective Modes in Fermi and non-Fermi Liquids* ([link](#)). Defended April 2024.

Visiting Ph.D. student with Prof. Koenraad Schalm at Leiden University, Sep-Dec 2024.

### M. Sc. Physics

Gothenburg, Sweden

Chalmers University of Technology

2019-2021

Average grade: 5.0/5.0.

Thesis: *Surface Plasmon Polaritons in Strongly Correlated Media* ([link](#)). Supervisor: Prof. Ulf Gran.

### B.Sc. Engineering Physics

Gothenburg, Sweden

Chalmers University of Technology

2016-2019

Average grade: 4.87/5.0.

Thesis: *Simulating Many-Particle Systems on an Emulated Quantum Computer* ([link](#); [in Swedish](#)).

Supervisors: Profs. Christian Forssén and Andreas Ekström.

## Awards

*CBA Poster Prize*

2025

Prize for best poster at the yearly Community Building Nano at Chalmers University of Technology. Received 10 000 SEK in travel funds.

*Excellence Initiative Nano Ph.D. Fellowship*

2021

Allows for freely chosen research within in the field of Nanoscience at Chalmers. Chosen as one of three out of more than 300 applicants.

*Guldkärnan award for best T.A.*

2018, 2021

Received the prize for best Teaching Assistant (twice) by the students at the Engineering Physics and Engineering Mathematics programs at Chalmers.

## Publications

### Journal Articles

E. Nilsson, U. Gran, and J. Hofmann (Oct. 2025). "Nonequilibrium Relaxation and Odd-Even Effect in Finite-Temperature Electron Gases". *Physical Review X* 15.4, p. 041007. [arXiv:2405.03635](#).

### Preprints

E. Nilsson and K. Schalm (Dec. 2025). "Quantum Critical Theories in a Periodic Potential: Strange Metallic Thermoelectric and Magnetotransport". [arXiv:2512.19480](#).

U. Gran, E. Nilsson, and J. Hofmann (Dec. 2023). "Shear Viscosity in Interacting Two-Dimensional Fermi Liquids". [arXiv:2312.09977](#).

### Theses

E. Nilsson (2024). "[Electron Transport and Collective Modes in Fermi and Non-Fermi Liquids](#)". Licentiate thesis. Chalmers University of Technology.

E. Nilsson (2021). "[Surface Plasmon Polaritons in Strongly Correlated Media](#)". M.Sc. thesis. Chalmers University of Technology.

## Teaching experience

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### Lecturing

#### String Theory FFM485

Department of Physics

Co-responsible for lecturing, course administration and oral examination.

Chalmers University of Technology

2022-2025

### Supervision

#### Main supervisor, M.Sc. thesis

Department of Physics

Eli Ismailov, *Fermi Surfaces of Holographic Metals* ([link](#)).

Chalmers University of Technology

2024

#### Main supervisor, B.Sc. thesis group

Department of Physics

Group of six B.Sc. students; thesis on holographic methods in condensed matter physics.

*Konduktiviteten hos ett starkt kopplat 2D-material* ([link](#); [in Swedish](#)).

Chalmers University of Technology

2024

### Teaching assistantships

#### Teaching Assistant

Department of Physics

Mechanics I (FFM516) and II (TIF375): exercise classes and grading.

Chalmers University of Technology

2021-2026

#### Teaching Assistant/Amanuensis

Department of Mathematical Sciences

Analysis (single- and multivariable), Linear Algebra, Statistics; Engineering Physics/Mathematics programs.

Chalmers University of Technology

2017, 2019-2020

## Conferences & Schools

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### SCGP, Stony Brook University

*Black holes and strongly coupled thermal dynamics*

Stony Brook, New York, USA

2025

### KITP, UCSB

*Quantum Matter with and without Quasiparticles*

Santa Barbara, California, USA

2023

### NORDITA

*Quantum Connections Summer School*

Stockholm, Sweden

2023

### NORDITA

*Recent Developments in Strongly-Correlated Quantum Matter*

Stockholm, Sweden

2022

## Grants received

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### The Royal Swedish Academy of Sciences

*General announcement for physics ("Stiftelsen Hierta Retzius fond för vetenskaplig forskning")*

24 400 SEK (~2400 €). Funded travel to the Simons Center for Geometry and Physics.

2024

### The Royal Swedish Academy of Sciences

*General announcement for physics ("Stiftelsen Olof Ahlöfs fond")*

23 100 SEK (~2300 €). Funded travel to KITP.

2022

## Talks given

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### Quantum matter group seminar

*"Quantum critical theories in periodic potentials: Toward Holographic EMT"*

Leiden University

2025-12-08

### Nano SmallTalk

*"Holographic Effective Medium Theory", Invited talk*

Chalmers University of Technology

2025-12-01

### SHP seminar

*"Quantum critical theories in periodic potentials: Toward Holographic EMT"*

Chalmers University of Technology

2025-11-07

### Popular science presentation to high school students

*"Från rostig koppar till svarta hål"*

Solbergagymnasiet

2025-10-07

### Quantum matter group seminar

*"Nonequilibrium relaxation and odd-even effect in 2D Fermi liquids"*

Leiden University

2024-09-25

**Quantum Materials seminar***"Holographic Models for Plasmons in Strange Metals"***Chalmers University of Technology**

2022-11-30

**SHP seminar***"Electromagnetic response in strongly correlated media"***Chalmers University of Technology**

2022-06-10

## Languages

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**Swedish:** Native**English:** Advanced*Fluent, 8.5/9.0 IELTS***Spanish:** Intermediate*Intermediate reading comprehension, basic communication*

## Computer skills

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**Numerical methods:** Discretization of PDEs (finite difference and spectral methods); large-scale linear and nonlinear eigenvalue problems; Krylov subspace methods and preconditioning.

**Scientific computing:** C, Python, PETSc, SLEPc, MPI, HDF5.

**Tools:** Linux, Git, Bash,  $\text{\LaTeX}$ , Mathematica.