Christopher Ekman

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Education

KTH Royal Institute of Technology | *Stockholm*
MASTER OF SCIENCE IN ENGINEERING - ENGINEERING PHYSICS, THEORETICAL PHYSICS TRACK | *August 2017 - June 2022*
- Master's thesis title: Crosscap States in Integrable Spin Chains
- Master's thesis advisor: Dr. Konstantin Zarembo

Stockholm University | *Stockholm*
PHD STUDENT | *January 2023 - Autumn 2027*
- Working on strongly correlated systems and open quantum systems
- Advisor: Dr. Emil J. Bergholtz

Projects

Crosscap states in integrable spin chains | *Nordita*
SUPERVISOR: DR. KONSTANTIN ZAREMBO | *Spring 2022*
- Analytically studied integrable overlaps in spin chains
- Used the quantum inverse scattering method, and related concepts
- Performed on my own.

Calogero-Moser Pole Dynamics of the Nonlinear Schrödinger Equation | *Department of Physics, KTH*
SUPERVISORS: DR. EDWIN LANGMANN AND DR. BJORN BERNTSSON | *January 2021- July 2021*
- Studied the pole dynamics of singular solutions of the non-linear Schrödinger equation.
- Worked using the general tools of classical integrable systems.
- Performed in collaboration with another student.
- Resulted in a project report.

Finite-dimensional $\mathcal{PT}$-symmetric Hamiltonians with an application to neutrino physics | *Department of Physics, KTH*
SUPERVISOR: DR. TOMMY OHLSSON | *January 2020 - June 2020*
- Bachelor's degree thesis.
- Developed a suitable definition of $\mathcal{PT}$-symmetry for finite-dimensional 3d systems, wrote the most general three-dimensional $\mathcal{PT}$-symmetric Hamiltonian relevant for neutrino oscillations, and determined the transition probabilities.
- Performed in collaboration with another student.

Deep UV-Lithography | *Department of Applied Physics, KTH*
SUPERVISOR: DR. CARLOTA CANALIAS AND PATRICK MUTTER | *January 2019 - June 2019*
- Successfully designed, constructed, and tested a calibration set-up to accurately measure the periodicity of photoresist gratings, with periodicities of order $500\mathrm{nm}$.
- Performed in collaboration with another student.

Intermodulating AFM | *Department of Applied Physics, KTH*
SUPERVISOR: DR. DAVID HAVILAND | *Summer 2019*
- Experimentally studied the response of an AFM when driven by a pair of non-equal frequencies.
- Programmed a computer model of the AFM using Python.
- Performed in collaboration with two other students.

Publications

IN REVIEW

Ekman, C, Bergholtz, E.J. 2024. Liouvillian skin effects and fragmented condensates in an integrable dissipative Bose-Hubbard mode

Teaching Experience

| Spring 2024 | **Mechanics 2**, Teaching Assistant | *Stockholm University* |
| Spring 2024 | **Electromagnetism**, Teaching Assistant | *Stockholm University* |

Skills and Languages

Programming languages	Python, Matlab, Go, Mathematica
Swedish	Native
English	Fluent
Spanish	Basic