

# Emil Ryd

I am a 17-year old aspiring physicist with a deep interest in physics and computational modeling. Outside of this I enjoy programming, hiking and playing volleyball.

## Education

### **UWC Red Cross Nordic, IB Diploma (2021-):**

Achieved grades 1st term: 40/42

### **Kungsholmens Gymnasium, Swedish High School Program**

**(2020-21):** Grade average: A

## Research Experience

**Agent-based model for boarding airplanes:** I was part of the team representing Norway in the International Mathematical Modeling Challenge 2022, being ultimately responsible for setting up an agent-based model to determine the most efficient boarding strategies. We submitted a 20-page report concluding our results.

**Antiproton Radiotherapy Experiment Proposal:** Setting up a team to compete in the 2022 edition of the competition Beamline for Schools hosted by CERN, I proposed - after discussions with theoretical physicists in the field - an experiment meant to measure energy levels of nuclear fragments produced in antiproton radiotherapy

**Spring Motion Modeling:** On my own, I conducted an experiment to find out the motion of a mass in orbit in conditions of "spring-like" gravity (force increasing linearly with distance). I set up a computer model in Python to simulate it, and tested it against my experimental results. The final motion is elliptical, but the orbits themselves rotate around the center over time, creating a flower-like shape.

## Activities

**Vaccess (2020-):** I have programmed and launched an app on the App Store in Sweden, which enables users to catalogue vaccinations they've taken and be notified about future vaccinations.

**Sweden's Student Councils (2019-2021):** I got elected to sit on the board for two years and took part in leading the national organization for student councils in Sweden, and met with politicians and ministers to discuss school policy.

**Programmers Club (2022-):** I am leader of this club at my school where we meet every week and I teach my classmates competitive programming in C++.

**LEAF (2021-):** At my school, I am leader of this registered environmental NGO which fundraises money by spreading awareness of environmental issues through workshops and cafes that we use to renovate a primary school in Ghana.



## Competitions

### **Winner of Norsk Fysikkolympiade (Norwegian Physics Olympiad) 2021-**

**2022:** Out of 700+ participants, thus qualified for Norway's IPhO team 2022.

**T-8 Abelkonkurransen (Norwegian Mathematics Olympiad) 2021-2022:** Out of 2200+ participants, qualified for the Nordic Mathematical Contest

**Finalist in Norsk Astronomiolympiade (Norwegian Astronomy Olympiad) 2021-2022**

## Other Awards

**RCNMUN 22':** Best Delegate in Crisis Committee, Best Draft Resolution

**Harvard Undergraduate Economics Competition 2022:** Qualified for quarterfinals.

## Skills

### **Programming**

Computational Modeling (Python, Repast Symphony)  
Python  
Java  
C++  
Swift

### **Mathematics and Physics**

Advanced calculus  
Particle physics  
Physics problem solving  
Data analysis (Excel, Logger Pro)