

# Eirik Rolland Enger

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## PhD candidate

PhD candidate at the complex systems modelling group at the Department of Physics and Technology, University of Tromsø.  
Fond of abstract ideas, free open-source software and skiing.

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## Education

- 2020–2024 (expected)** *PhD, Climate Physics at the University of Tromsø (Tromsø, Norway)*  
Thesis title: Global temperature response to volcanic activity
- 2015–2020** *MS in Space Physics at the University of Tromsø (Tromsø, Norway)*  
Thesis title: A model for IS spectra for magnetized plasma with arbitrary isotropic velocity distributions. Link: <https://hdl.handle.net/10037/19542>  
During the Master Thesis work I developed a **python program** that solves an incoherent scatter radar equation. The equation is solved for any oblique angles between the radar pointing direction and the magnetic field line, and it accepts any isotropic electron velocity distribution. This made it possible to calculate the spectrum of superthermal electrons observed by a moving radar numerically and compare to real observations, which was a new contribution to the field.

## Experience

- 2018–Now** *Teaching Assistant at University of Tromsø (Tromsø, Norway).*
- FYS-2000 Quantum Mechanics (S18)
  - FYS-0100 Basic Physics (F18,F19)
  - FYS-2009 Sun, planets and space (F20,F21)
  - FYS-3002 Techniques for investigating the near-earth space environment (S21)
- 2019 (2 months)** *Summer student at FFI — Norwegian Defence Research Establishment (Kjeller, Norway).*
- During eight weeks in the summer of 2019 I worked at the FFI, continuing the project on software defined radios from 2018. The goal this summer was to be able to do real time spoofing of a GNSS (Global Navigation Satellite System) receiver, meaning it should be possible for the spoofer to make adjustments to the path the fake signal gives, in real time. Multiple open-source projects was used, some of which I modified or wrote myself during the project. The added code was written in Python, and the complete project can be found in my **bladeGPS-Game repository**. The project ended in a successful demonstration of real-time control of a spoofing signal.

**2018 (3 months)** *Summer student at FFI — Norwegian Defence Research Establishment (Kjeller, Norway).*

During nine weeks in the summer of 2018 I worked at the FFI on a project about software defined radios for use with jamming and spoofing of GNSS receivers. Open-source projects was used along with a number of different hardware, most notably the **USRP**. At the end of the period, spoofing of both GNSS receivers and a mobile phone was demonstrated, and a report documenting the process was written.

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## Technical Experience

<b>Website</b>	I have a website called <b>flottflyt.com</b> where I put up projects I work on in my spare time, as well as any other content I find interesting. There, you can find my own NFT storefront that uses the <b>metaplex</b> protocol on the <b>Solana</b> blockchain.
<b>Open Source</b>	Maintainer of the project <b>ncdump-rich</b> which is published on <b>PyPI</b> . This is a pre-viewer for quickly showing formatted metadata in <code>.nc</code> files, written in python. Also made contributions to <b>stpv</b> which is a general previewing tool to be used within the terminal, for example with a file manager like <b>lf</b> or <b>nnn</b> .
<b>Programming Languages</b>	<b>python:</b> Have been programming in python for four years with increasing intensity, creating multiple projects over the years. See my <b>github</b> for a closer look at the different repositories.

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